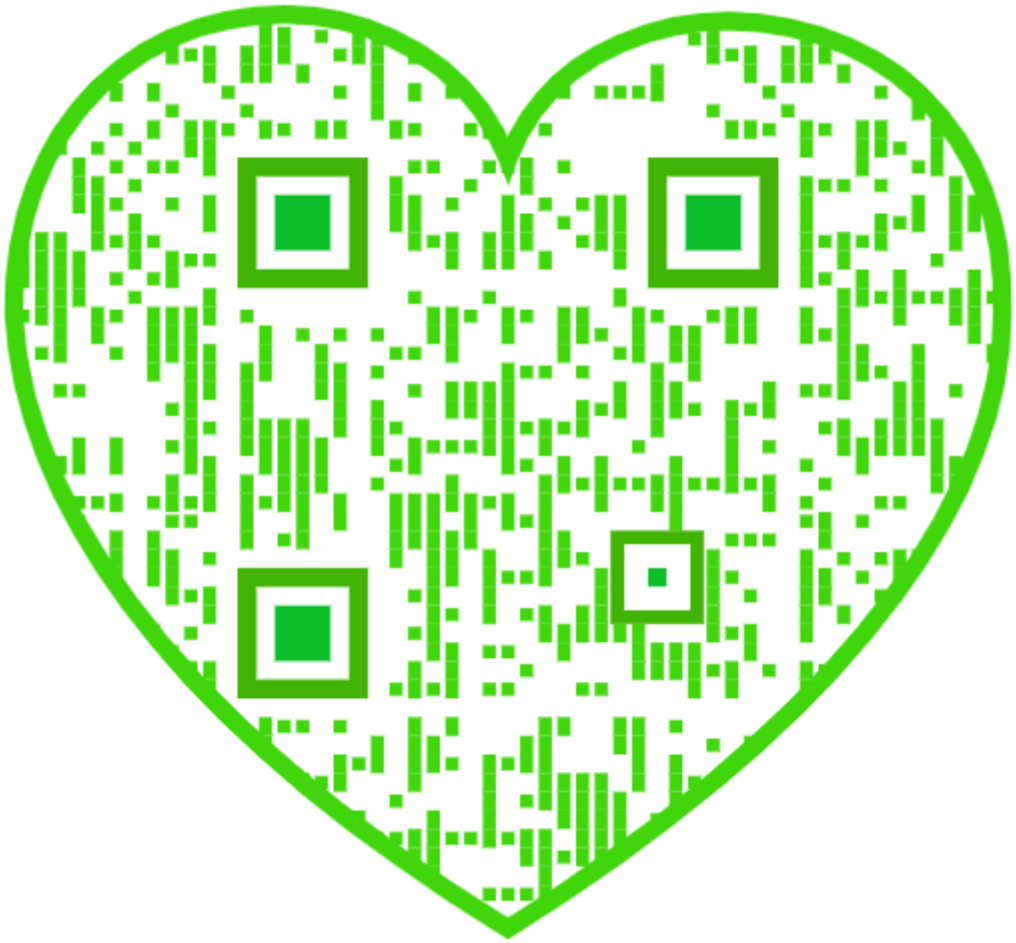
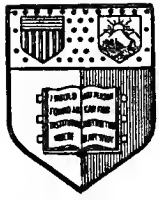




New York
State College of Agriculture
At Cornell University
Ithaca, N. Y.

Library

Cornell University Library
SF 285.H41
The gentleman's stable manual.
3 1924 003 179 953
mann

The original of this book is in
the Cornell University Library.

There are no known copyright restrictions in
the United States on the use of the text.

http://www.archive.org/details/cu31924003179953

THE WEIGHT-CARRYING HUNTER.

THE GENTLEMAN'S

STABLE MANUAL;

OR, A TREATISE

ON THE CONSTRUCTION OF THE STABLE:

ALSO

ON THE FEEDING AND GROOMING OF HORSES;
ON THE HYGIENIC TREATMENT OF THE SICK HORSE;
ON SHOEING;
ON THE MANAGEMENT OF THE HUNTER;
AND ON
EQUINE DISEASES AND ACCIDENTS, WITH THE MOST SCIENTIFIC MODES OF TREATMENT.

BY

WILLIAM HAYCOCK, V.S., AND M.R.V.C.S.

THIRD EDITION.

ILLUSTRATED WITH HIGHLY-FINISHED WOOD ENGRAVINGS.

"Experto crede."

LONDON:
ROUTLEDGE, WARNE, AND ROUTLEDGE,
FARRINGDON STREET.
1861.

PREFACE.

After many delays, arising almost entirely from engagements of a professional character, I am at last enabled to present this work to the public.

It professes to be a plain practical treatise upon the management of the Horse, and upon the diseases and accidents to which that noble animal is liable; together with ample details of those modes of treatment which I have found to be the most efficient and rational hitherto recommended.

This book has been written from a strong conviction that it is wanted. A plain, useful work, upon Veterinary Hygiene and the practice of Veterinary Medicine—one that should be scientific, without any parade of science on the part of its author—one that should be in accordance with the advanced spirit of scientific research so characteristic of the age,—has long been required. If, therefore, the present volume does not meet this want, its deficiencies will not arise from any lack of industry on the part of the author, but rather from his inability to understand, or his want of power to supply, what is so essentially necessary.

Horses, like human beings, have advanced in civilization, and the diseases to which they are liable are greatly changed;—they are not marked by that acute sthenic character so peculiar to those forms of equine disease which prevailed in the "good old times;" while many diseases have all but disappeared, and new ones have come into existence.

The assertion that horses, like human beings, have advanced in civilization, may appear strange and startling; of its truth, however, I have no doubt. It is generally admitted that, during the last century, the breed of horses in this country has materially improved. Now improvement in the breed of either a horse or any other animal cannot exist, unless the quality of the nervous system be also improved—the former, in fact, implies the latter; and as the faculties of the intelligence of the animal are resident within, and dependent upon, the nervous system—and as it is a fact that the Horse has improved in breed—and as the fact of his being an intelligent and reasoning animal cannot be disproved—and as he occupies that intimate relation to man which he does, the assertion that he has advanced in civilization may not, upon due consideration, appear very extravagant. The animal is placed amid elements, the operation of which must necessarily advance him, in civilization.

Assuming these statements to be true, two questions are presented for examination: 1st—How is this change in equine disease to be satisfactorily accounted for? 2nd—What rela-

tion does it bear to the hygienic treatment of horses, and to the practice of veterinary medicine? A correct answer to the latter question is of immense importance to the public.

The answer to the first question is to be found in the improved breed of the animal; in the different uses to which horses are made subservient; and in the very different hygienic conditions under which they are placed from what they were fifty, forty, or even twenty years ago.

In answering the second question, it may simply be remarked, that the altered character of equine disease (a change which is acknowledged on all hands by the elder members of the profession) necessarily involves an entire change in the practice of the veterinary art; it calls forcibly for a higher degree of education in the veterinary surgeon; it requires him to possess a deeper knowledge of the allied sciences of medicine—viz.: Anatomy, Physiology, Chemistry, Botany, and Therapeutics; to possess a greater skill in diagnosis; and to know the exact value of medicine in, and its relation to, every form of disease which may present itself.

The book contains certain peculiarities, attention to which, it is hoped, will prove of advantage to the reader.

1st. Of the several diseases treated upon, I have not only fully detailed the common symptoms and general characters of each, but I have also carefully noted those which are strictly pathognomonic of the malady; these are described in separate paragraphs, and printed in italics. The practical value of this

arrangement, and the facility it affords for reference, are too apparent to require further examination. (For further remarks upon the importance of pathognomonic symptoms, and how to recognise them, see pages 134 to 136.)

2nd. It contains a section especially relating to the consideration of feeding and dieting sick horses. This is a new feature; not a single veterinary treatise in our language contains a chapter of a like character

3rd. Attention is directed to at least three forms of disease, which, up to the present time, are either unknown or without place in our nosology. I may, therefore, claim the merit of being the first to describe, or properly place them. These diseases are—Ozena, see pages 238 to 244; Hay Asthma, see pages 288 to 294; Myositis, see pages 422 to 426. The reader will find, moreover, that an addition has been made to the list of equine Diseases of the Skin.

In conclusion, I have to thank my friends—W. Crosland, Esq., architect, Halifax, for the beautiful ground plan and elevation of a stable, which has been prepared expressly for this work; Captain F. W. Kirby, R.E.R., for his kindness in aiding me with his ready pencil to prepare drawings of many of the illustrations; and Mr. J. Fountain, of Leeds, for his care and great skill in engraving the same.

Veterinary Institution,
West Parade, Huddersfield,
July, 1859.

PREFACE TO THE SECOND EDITION.

The rapid sale of the former edition of this work, and the very favourable manner in which it was received both by the press and the public generally, not only in England but in America, I regard as a flattering proof that my labours in the advancement of Veterinary Medicine are both understood and appreciated.

The present Edition in all essentials is precisely similar to the former; and I trust that those who purchase it will derive from its pages that practical value and usefulness which I believe them to possess.

I remain, the Public's

Most obedient Servant,

THE AUTHOR.

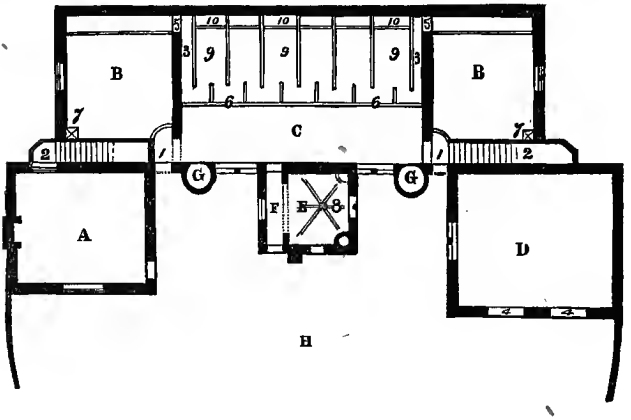
87, Cross Street,
Manchester,
March 22, 1860.

Plan of a Stable,

After Designs by W. Crosland, Esq., Architect, Halifax.

ELEVATION.

GROUND PLAN.



EXPLANATION OF FOREGOING PLAN OF STABLE.

H Yard of stable.

A Saddle and Harness Room. This room has not a direct communication with any part of the stable.

D Coach-house.—See page 25.

F E Porch of stable. *F* is the way leading out of the porch into the stable; *E* the wash-house, provided with boiler, &c.

C Gangway of stable.—See pages 16 and 17.

B B Loose boxes, situate at each end of the stable. These boxes can be entered either *within* or from *without* the stable.

G G Towers where hay is supposed to be let down from the chamber above. By a proper arrangement, these towers may be planned to act as ventilators to the stable.—See Elevation, also pages 17 to 20.

1 1 Way out of the yard and stable into *B B* loose boxes.

2 2 Stairs leading to chambers above the stable. The stairs on the left side of Plan have no direct communication with the stable. The entrance to this flight of stairs is behind the harness room *A*. The entrance to the stairs on the right side of Plan is within the stable. These stairs are supposed to lead to the granary and hay-loft.—See pages 21 and 22.

6 6 Drain of stable.—See pages 20 and 21.

9 9 Stalls of stable.—See pages 6, 13, 14, 15, and 16.

10 10 Space between back wall of stable and hay-rack.—See page 8.

3 3 Passages leading out of stable to behind loose boxes.

5 5 Doorways leading to space behind loose boxes.—See pages 23 to 25.

CONTENTS.

PART I.

SECTION I.

ON THE STABLE AND ITS PROPER CONSTRUCTION.—Proper situation of the Stable, 3. Aspect of, 3. Mode of Lighting, 4. Height of Stable, 5. Size of Stable, 28. Width of Stable, 5. Doorways of, 5. Stalls, 6. Stalls, proper size of, 6. Setting of ditto, 13. False Bottoms to ditto, 14. Hayracks, 8. Manger, 8. Head Collars, 9. Roller, 10. Pillar Reins, 11. Clog, 11. Rack Chain, proper form of, 12. Gangway of Stable, 16. Ventilation of Stable, 17. Mr. Watson's mode considered, 19. Drainage of Stable, 20. Hay Chambers, 21. Corn Chamber, 22. Loose Boxes, 23. Saddle and Harness Rooms and Coach House, 25. Porch and Washing Room, 26. Manure Depôt, 27. Water Tanks, 27.

SECTION II.

ON FEEDING HORSES.—Preliminary remarks, 32. What constitutes Food, 32—34. Kinds of Food enumerated, 35. Hay, 35. Chopped Hay, 36. Clover Hay, 37. Oats, 37. Quantity of Oats necessary to give, 38. Crushed Oats, 39. Beans, Bean Flour, 40 and 41. Locust, its value as a fattener, 42. Water, 43. Quantity to allow and kind of to give Horses, 43 and 44. Rules for Dieting the Horse, Green Food, 35.

SECTION III.

ON GROOMS, GROOMING, AND THE GENERAL MANAGEMENT OF HORSES.—General remarks upon Grooms, 47 and 48. Grooming, 49. Stable Tools necessary, 49. Cow Dung Box, 51. Horse Clothing, 52. Linen Bandages, 52. Wet Bandages, value of, 53. Duties of the Groom, 54—57. Treatment of the Horse when Perspiring, 57. Temperature of the Stable,

58. Exercise of Horses, 58. Hours of Feeding, 58. Clothing Horses in the Stable when wet. 58—60. Bandages and how to Bandage a Limb, 60 and 61. Racking Horses up, Folly of, 62. Washing Legs, 62.

SECTION IV.

On the Management of the Hunter.—Hunting Condition, definition of, 64.—Management of the Hunter, to obtain Condition of, 65—68. Paddocks for Hunters, 65. Tips to the Feet of, 66. Purging Medicine to Hunters, 66. Exercise of, 67. Treatment of the Hunter after the Chase, 68 and 69. Rationale of such Treatment, 70—73. Delicate Feeders, 73. Sudden attacks of Disease to which Hunters are liable, 74 and 75. Injuries to their Limbs, 75. Tincture for, 75. Preparation of the Hunter for Physic, 75—77. Sore Backs and their prevention, 78.

SECTION V.

On the Shoeing of Horses and on the General Treatment of the Foot.—Preliminary Remarks on the Foot of the Horse, 79 and 80. The organization of the Foot, 81—85. Rate of growth of the Foot, 86. Reasons why horses are lamed in Shoeing, 87. Paring and Rasping the feet, the bad effects of, 88. Form of Fore Foot Shoe, foot surface of shoe concave, rounded at the toe, 92 and 93. Bearing of the Shoe to be uniform, 93 and 94. Degree of Cover necessary to fore feet, 94. Fit of Shoe, 94 to 96. Number of Nails necessary to secure Shoe to Foot, 96 and 97. Leather and Gutta Percha Soles to Feet, 98 and 99. Shoeing the Hind Feet, 99. Rules in Shoeing hind feet, 99 and 100. Cutting, Prevention of, 101—103. Form of Shoe to prevent cutting, 193. Forging and its prevention, 103—105. Leather Soles to hind feet, necessity of, 105 and 106. Rules to be observed in Shoeing the Horse, 106 and 107.

SECTION VI.

On the Hygienic Treatment of the Sick Horse.—Preliminary Remarks, 108 and 109. Articles of Diet, proper for a sick horse, 110. Water, 111. Barley Water, 111. Rice Water, 112. Rice, 112 and 115. Oatmeal and Linseed Gruel, 112. Sago Gruel, 113. Hay Tea, 113. Milk, Milk and Water, 113 and 114. Bran, 114, Hay, 115. Speared Corn, 116. Malt, 116. Green Food, 116 and 117. Housing the Sick Horse, 117. Loose Boxes and temperature of, 117 and 118. Clothing the Patient, 118 and 119.

PART II.

SECTION I.

ON THE DISEASES OF THE HORSE, AND ON CERTAIN GENERALITIES CONNECTED WITH HIS TREATMENT.—On the Causes of Disease, 123 and 127. Knowledge relating to Horses which amateurs should possess, 123 and 124. Examination of the patient, how to do it, 125. Diagnosis of Disease, 125 and 126. The Pulse, and its importance in disease, 127. Convenient localities to feel the pulse, 128. Natural character of the pulse in health, 128 and 129. Registration of the natural pulse, necessity of, 129. The Organs of Respiration, 129 and 130. Disturbance of the Respiratory Organs, 130 and 131. Digestive Organs, general symptoms in diseases of, 132. Depurating Organs: the Skin and the Kidneys, examination of, 132 and 133. Organs of Locomotion, examination of, 133 and 134. Pathognomonic Symptoms, their value and importance in diagnosing disease, 134 and 135. How to distinguish Pathognomonic Symptoms, 135 and 136. Selection of a remedy for Disease, and Genuineness of Drugs, 136. Amendment of patient, Simple Remedies, and Repetition of Medicine, 137 and 138. Medicine in Chronic Disease, 139. Solid and Liquid Medicines, 139, 140, and 141. Rules to observe in giving Drenches, 140 and 141. Danger attending the giving of liquids, 141. Pouring medicine down the nostrils, danger of, 142. Medicine mixed with Food, 142. Administration of Balls, 143. Balling Irons, 144. Medicines in Powder, 145. Accidents and Sudden Illness to Horses, 146. Colic, 147. Drivers of Teams, and Gentlemen when travelling long distances with Horses, should go prepared for accidents, 147, 148, and 149. What to prepare for in cases of emergency, 149. Poultices, 149, 150, and 151. Poultices, how made, 151. How to fix a poultice to the neck, 152, 153, and 154: how to the abdomen, 155. Fomentations, 155: to the limbs and to the neck, 155 and 156. Temperature of Fomentations, 156. Injections, temperature of, 158. Use and importance of Injections, 157 and 158. Blisters: value of Blisters, and when to apply them, 158. Articles to use for Blistering, Mustard and Cantharides, 159. James's Blister, 161. Use of Firing, and necessity for, 162. Action of the Fire in different forms of disease, 163. Direction of the lines and depth of do., 164,

Matters to observe relating to the operation of Firing, 165. Setons and Rowels, 167. Purgatives, 168 and 169. Diuretics, 169. Bleeding. 171.

SECTION II.

On the Skin and its Diseases.—Preliminary Remarks on the Structure and Functions of the Skin, 173—175. The law of sympathy which exists between the Skin and the Mucous Membranes, 175. Necessity of attending to this in every case of Disease of the Skin, 175. *Scarlet Fever*, 176. Forms of, 177 and 178. Malignant Scarlet Fever, 178. Pathognomonic Symptoms of, 179. Complications of, 180. Prognosis of, 180. Causes of, 180. Non-Contagiousness of, 181. Treatment of, 181. Necessity of pure and efficient ventilation in Scarlatina: Scarlatina not contagious in the Horse, 181. *Mange* and its Symptoms, 185. Cause of, 187. Mange Insect, description of, 188. Treatment of Mange, 189. *Grease and Chapped Heels*, 192. Stages of, 193 Causes, 194. Treatment of, 195. *Surfeit*, forms of: *Prurigo*, 199. Symptoms of, 200. Treatment of, 201. *Itching of the Extremities*, Treatment of, 202 and 203. *Eruptions of the Skin*, 203. Forms of, 204. Treatment of, 205. *Bulbous Prurigo*, 205. Symptoms of, 206. Treatment of, 206. *Warbles*, Symptoms and Causes of, 207. Treatment of, 208. *Soreness of the Skin*, 209. Symptoms of, 210. Treatment of, 211. *Angleberries and Warts*, 212. Cause of, and manner of their growth, 213. Treatment of, 213. *Ringworm*, Symptoms of, and Treatment, 215 and 217. Hair Cysts, 217.

SECTION III.

Diseases of the Organs of Respiration.—Preliminary Remarks, 219. On the general characters of the Respiratory Organs, 220. Diseases to which they are subject, 221. *Catarrh*, 222. Symptoms of, 223. Treatment of, 223. *Epizootic Catarrh* and its symptoms, 225. Causes of, 227. Terminations of, 227. Treatment, 228. *Typhoid Pneumonia*, 231. Symptoms of, 232. Causes, 233. Complications, 233. Prognosis, 234. Appearances of the animal after death, from Typhoid Pneumonia, 235. Treatment of, 236 and 237. *Ozena* and its symptoms, 238 and 239. Seat of the Disease, 239 and 240. Diseases which may be mistaken for Ozena, 241. Treatment, 242, 243, &c. *Laryngitis* and its symptoms, 247. Treatment of, 248 and 249. Necessity of Tracheotomy in, 250. *Spasm of the Larynx:* Symptoms of, 251. Causes, 252. Treatment of, 253. *Bronchitis:* Symptoms of, 254. Terminations of, 255. Causes of, 255. Treatment, 256 and 257. *Pneumonia* and its symptoms, 259 and 260. Stages of Pneumonia, 260 and 261. Causes of, 263. Treatment of, 264. *Thick Wind: Broken Wind:* Nature of Thick Wind and Broken Wind, 265—267. Symptoms, 267 and 268. Forms of disease which may be mistaken for

Thick and Broken Wind, 269. Treatment of the two, 270 and 271. *Pleurisy and Pleurodynia:* Symptoms of these diseases, 273, 274, &c. Causes of, 275. Terminations of, 276. Treatment of, 277. *Roaring*, 279. Causes of, 279—281. Treatment, 282 and 283. Prevention of the roaring sound, 284 and 285. *Cough: Chronic Cough:* Causes of, 287. Treatment of Chronic Cough, 287 and 288. *Hay Asthma:* Symptoms of, 289. Causes of, 290. Treatment of, 292 and 293.

SECTION IV.

Diseases of the Organs of Digestion.—Preliminary Remarks explanatory of the nature and uses of the Digestive Organs, 295—297. Diseases to which the Digestive Organs are subject, 298. *Derangements of the Teeth*, 298. Irregularities of their growth, 299. Symptoms of, 300. Treatment of, 301. *Abnormal Growths of the Teeth*, 302. Treatment of, 303. Rasping the Teeth, 303. Caution required in rasping the Teeth, 304. *Toothache* and its symptoms, 305. Treatment, 306. Irritation of the Incisor Teeth, 307. *Wolf's Teeth*, 307. *Lampas*, 308. Treatment of, 308. *Choking:* Symptoms of, 309. Causes and Treatment of, 310 and 311. *Loss of Appetite;* Causes of, 312. It may arise from a thorn or a nail being adherent to the mouth, 312. Treatment of, 312. *Indigestion:* Symptoms of, 314 and 315. Causes and Treatment of, 315. *Gorged Stomach:* Symptoms of, 317 and 318. Causes, 318. Complications of, 319. *Rupture of Stomach:* Symptoms of, 329. *Rupture of the Diaphragm:* Symptoms of, 321. Treatment of Gorged Stomach, 321 and 322. *Gastritis:* Symptoms of, 323 and 324. Chronic 323 and 324. Chronic Gastritis, 325. Causes of, 327. Treatment of, 327. *Colic*, and its symptoms and forms, 329—331. Treatment of, 332 and 333. *Enteritis* and its symptoms, 335 and 336. Treatment of, 337. Necessity of Hot Fomentations in, 343. *Strangulation of the Bowels:* Symptoms of, and Treatment of, 340 and 341. *Acute Diarrhœa:* Symptoms of, 346 and 347. Causes of, 348. Treatment, 349. *Sub-acute and Chronic Diarrhœa:* Symptoms of, 351. Causes, 351. Treatment of, 351 and 352. *Superpurgation:* Symptoms of, 353. Treatment of, 354. *Worms*: Kind and Varieties of, 355. Treatment of, 356 and 357.

SECTION V.

Diseases of the Urinary Organs.—Preliminary Remarks: The Kidneys and Urinary Organs generally, and their uses, 359 and 360. *Nephritis:* Symptoms of, 361 and 362. Causes and Treatment of, 363. *Diuresis*: Symptoms of, 364 and 365. *Irritation of the Bladder:* Symptoms and Treatment of, 367. *Hœmaturia:* Symptoms, Causes, and Treatment of, 367—369. *Scanty Emission of Urine:* Symptoms and Treatment of, 369 and 370. *Spasm of the Bladder:* Symptoms and Treatment of, 370 and 371.

SECTION VI.

Diseases of the Nervous System.—Preliminary Remarks, 372—374. *Tetanus, or Lock Jaw:* General considerations relating to, 374 and 375. Stages of, 376 and 377. Symptoms of, 375—378. Causes of, 378. Treatment of, 379—388. Local Treatment of Tetanus, 385. *Paralysis:* Different forms of, 388. Causes of, and Treatment, 389—393. *Apoplexy:* Symptoms of, 394. Stages of, 394 and 395. Treatment of, 395. *Megrims:* Symptoms, Causes, and Treatment of, 396 and 397. *Hysteria:* Symptoms of, 399 and 400. Treatment of, 401 to 403.

SECTION VII.

Generalities.—Preliminary Remarks, 404. *Purpura Hæmorrhagica,* 405. Symptoms of, 400 and 405. Treatment of, 410. *Melanosis,* 408. Symptoms of, 409. Treatment of, 410. *Lymphitis:* Symptoms of, 410. Causes of. 412. Treatment of, 412 and 413. *Strangles:* General considerations upon, 415. Symptoms of, 416. Irregular Strangles, and Symptoms of, 417. Treatment of Regular Strangles, 418. Treatment of Irregular Strangles, 420 and 421. *Myositis,* 422. Causes and Symptoms of, 423. Treatment of, 425. *Chill*: Symptoms of, 427. Causes of, 427. Treatment of, 428. *Laminitis:* Symptoms of, 429. Terminations of, 430. Causes of, 431. Treatment of, 432. *Rheumatism:* Symptoms of, 435 and 436. Subacute form of, 437. Treatment of, 438. *Joint Evil* in Foals: Symptoms of, and Treatment, 440. *Common Opthalmia:* Symptoms and Treatment of, 440 and 441. *Specific Opthalmia:* Peculiarities of, 442. Treatment of, 443. *Opacity of the Cornea:* Treatment of, 444. *Nymphomania:* Symptoms and Treatment of, 445. *Glanders and Farcy:* Symptoms, Causes, and Treatment of, 445—447. *Swelling of the Sheath:* Treatment of, 447. *Over-Exhaustion:* Symptoms of, and Treatment, 448 and 449.

SECTION VIII.

Wounds and Injuries.—Preliminary Remarks upon, 451. Causes of, are of a twofold character—viz., Chemical and Mechanical, 452. Consideration of the mode in which causes operate, 452—459. Wounds and Injuries, how arranged and considered, 460. Five varieties of Wounds detailed, 460. Healing of Wounds, 460. Nature of the Healing Process, 461. Treatment of Wounds, 462—464. Sutures to Wounds, kinds of, 465. Rules for fixing Sutures, 466. Dressing of Wounds, Lotions proper for, 468. Bandaging Wounds, 469. Fomentations of, 470. High-heeled Shoe, 470. Loose Box to wounded patients, 471. Exercise to ditto, 470. *Punctured Wounds,* and their Treatment, 472—474. *Contused Wounds,* and their Treatment, 474 and 475. *Sympathetic Fever,* or Systemic Disturbance caused by Wounds,

475. Treatment of Sympathetic Fever, 477. *Broken Knees*, 479. Structures usually injured in Broken Knees, 480. Examination of the Knees, 482. Washing the Knees, and how, 482 and 483. Treatment of Open Knee Joint, 485. Surgical Treatment necessary to ditto, 486. *Open Joint*, 488. Treatment of, 489. *Capped Hock*, 490. Treatment of, 491. *Fistulous Withers, Bruised Back*, 492. *Traumatic Opthalmia*, 493. Treatment of, 494.

SECTION IX.

LAMENESS.—Preliminary Remarks, 495—497. *Sprain of the Flexor Tendons*, 497. Symptoms and Treatment of, 498—500. *Spavin:* Considerations of, 500—502. Symptoms of, 503. Treatment of, 503 and 504. *Navicular Disease*, 505. Symptoms of, 506 and 507. Causes of, 507. Treatment of, 507 and 508. *Splint:* General Considerations of, 508. Treatment of, 509 and 510. *Ring Bone and Side Bone*, 510. *Wind Galls, Bog Spavin, and Thorough Pin*, 511. Treatment of, 511 and 512. *Curb*, 512 and 513. Symptoms of, 514. Treatment of, 514. *Shoulder Sprain*, 515. Symptoms of, 516. Causes of, 516 and 517. Treatment of, 517. *Thrush—Canker*, 517. Treatment of Thrush, 518. Do. of Canker, 519 and 520. *Sandcrack*, 520 and 521. Treatment of, 521. *Corns*, and Treatment of, 522 and 523. *Pricks from Shoeing, Punctured Foot*, and Treatment of, 523 and 524. *Quittor:* Causes and Treatment of, 524.

LIST OF WOOD ENGRAVINGS.

		PAGE.
1.	Ground Plan and Elevation of a Stable	0
2.	Head Collar	9
3.	Roller to fix in front of Manger	10
4.	Rack Chain	12
5.	False Bottom for Stable	14
6.	Plan of a Loose Box	25
7.	Horse in Loose Box	30
8.	Chaff Cutter	36
9.	Oat Crusher	39
10.	Hoof of Horse	82
11.	Microscopic Section of Hoof	83
12.	Section of Hoof	84
13.	Ground Surface of Hoof, or Sole of do.	85
14.	Fore Foot Shoe ; Foot, surface of	92
15.	Fore Foot Shoe, Ground Surface of	97
16.	Cutting Shoe for Hind Foot	103
17.	Ball Iron	144
18.	Poultice Cloth for Neck	153
19.	Syringe	157
20.	Mange Insects	188
21.	Head of the Horse (Section of)	240
22.	Diagram of the Lungs	266
23.	Grass, Anthox Odoratum	291
24.	Tooth Rasp	303
25.	Body Sacking	343
26.	Tetanic Horse	377
27.	Sutures, Twisted and Interrupted	465
28.	Needle for Interrupted Suture	466
29.	High-heeled Shoe	470
30.	Knee Joint of a Horse dissected	480
31.	Fore Leg of a Horse dissected, showing the Flexor Tendons and the Metacarpal Ligament	498
32.	High-heeled Shoe	499
33.	A View of the inside of the Hock Joint	502
34.	The Bones of the Fore Leg of a Horse	509
35.	Hind Leg of a Horse Dissected	513
36.	Shoulder of a Horse Dissected	516

THE GENTLEMAN'S STABLE MANUAL.

PART I.

Section I.—THE STABLE.

PROPER CONSTRUCTION OF STABLE.
STALLS: THEIR WIDTH AND LENGTH.
FALSE BOTTOMS.
VENTILATION.
DRAINAGE.
HAY AND CORN CHAMBERS.
LOOSE BOXES.
SADDLE AND HARNESS ROOMS
MANURE DEPÔT.
WATER TANKS, &c.

Since the publication of my first treatise on the diseases and medical treatment of the Horse, I have, on many occasions, received letters from numerous gentlemen, desiring me to write on the proper construction of the stable, and on the superintendence and general management of the horse. On these topics I shall offer a few remarks;—more I cannot do in a volume like the present. Indeed, a proper treatise upon either of these matters would, if justice were done, require a volume to itself. In the hope that what I may write upon these subjects will prove of service to the reader, I have pleasure in complying

with these numerous requests, and in presenting a few suggestions upon the subjects stated. Possibly I may not advance much that is new; I do not presume, however, to write for the instruction of the experienced. It is the novice in these matters I seek to benefit; the object being to disseminate sound information to those who require it, and who may think proper to seek it from the present volume. The dearth of correct information with regard to the proper construction and furnishing of the stable, may, perhaps, be mainly attributable to the want of practical knowledge displayed by the generality of architects in details relating to Stable Architecture. Before an architect can design a plan for a first-rate stable—a stable replete with every necessary convenience, and with every convenience placed in the most advantageous situation—it is certainly necessary that he be practically conversant with the requirements of a stable. Yet how frequently we look upon stables, which outwardly are very noble in appearance, and still, so far as utility and comfort are concerned, are anything but what they should be. They are either wrongly placed, badly ventilated, damp, or ill-drained; or the racks and mangers are badly constructed; or the stalls are too narrow or too broad; or there are other deficiencies which a practical eye detects at once. We should suppose it would be a very natural question for a gentleman, about to build a stable, to ask his architect if he knew practically every requirement necessary to the proper feeding, grooming, and hygienic treatment of the horse; and if he did not, how could such an architect give a plan wherefrom to construct a stable, replete with every arrangement and contrivance necessary for the comfort of its inmates? In the construction of a dwelling-house, an architect may be supposed not to be ignorant of the requirements necessary: he should, in fact, be familiar with them from the necessity of his position. But a

familiarity with horses, and with their requirements, does not fall to the lot of every man; neither is the information to be obtained in a day. It is only by a practical knowledge of the wants and requirements of the animal to be lodged, that a man is qualified to construct a proper dwelling for it. In speaking of the general ignorance of architects upon these matters, I do not wish to be understood as writing in a spirit of censure; but it cannot be expected that architects, not conversant with practical details of this kind, should be able to meet the requirements of the case.

Without entering into minute details, I will enumerate, and treat upon the principal essentials to be attended to in the construction of the stable. They are, for the most part, comprised in the following:—

I.—Situation and aspect of the Stable, and manner of Lighting.
II.—Height and width of Stable within.
III.—Height and width of Doorways; kind of Door; and Fixings.
IV.—Width and length of Stalls; their Construction, and Furniture.
V.—Ventilation of Stables.
VI.—Drainage of Stables.

In addition to the above, will have to be considered what may be termed appendages to the stable, viz.,—Loose Boxes, Saddle and Harness Rooms, Porch, Stove, Fire-Places, and Boilers, Manure Deptôs, and Water Tanks.

I.—Situation and Aspect of the Stable, and Mode of Lighting.—Never build a stable, if it can possibly be avoided,

in a situation closely contiguous to two streams of water; as, for example, a river on one side, and a goit or mill stream, or a canal on the other; particularly if the site be low, and the river be the common receptacle of the refuse from towns, and from manufacturing establishments, such as chemical works, mills, and dyehouses. I know of several stables so situate, belonging to the most profitable customers I have. In every example of the kind alluded to, the foundation of the stable and the bed of the river are upon the same level. Very few people would think of erecting a dwelling in a situation obviously so unhealthy: why, then, build a stable or a cowhouse in such a position?

A stable, to be well placed, should be built upon rising ground; with the front to the south, and the inmates facing the north. If possible, have the heads of the horses due north. A south light is usually cheerful and steady throughout the day. Have the windows a good size, both in width and in height. Many, not aware of the great importance of light, and its influence upon the health of animals, have their stables nearly dark. This is a great mistake; for light is as essential to the continued health and vigour of animals, as it is to vegetation. On this account, a north aspect for the stable should be avoided if it be possible. The number of windows necessary will, of course, depend upon the size of the stable: as a general rule, however, there should be one good-sized window for every three stalls. Again, the stable should not be closely surrounded with large trees; they impede the light and the air, and in addition they afford shelter to flies and annoying insects, and also, by their foliage, they attract a deal of moisture, which constantly tends to keep the building and the surrounding air damp, and unhealthy. The reason for prefering a south aspect will be obvious upon a little reflection. A west aspect is undesirable, not only on account of its being exposed to the west winds, but in

summer the stable will be intolerably hot in the afternoon; while, against an east aspect a similar objection presents itself. In summer, such a stable is intolerably hot, and uncomfortable in every respect, early in the morning. A north aspect is cold, and the sunlight never directly penetrates the apartment with any degree of power. To recapitulate: a stable, to be healthy, should stand upon rising ground; should face the south; should be fully exposed to the sunlight, and to the atmosphere; and it should be well drained.

II.—Height and Width of Stable within.—Eleven feet of height within the stable is quite sufficient. A greater height is objectionable on account of the chillness it might occasion; while, if lower to any considerable extent, it would be dark, and perhaps might prove unhealthy. In width, (or from front wall to back wall,) it should not be less than twenty-two feet. Many speak of eighteen feet as being sufficient, but experience shows that eighteen feet is too narrow; and where ground is not an object, seven yards from wall to wall, within, is not too much. This width leaves plenty of room for gangway; and a broad gangway contributes greatly to the noble appearance of a stable, and also to the convenience of those who attend upon the inmates.

III.—Height and Width of Doorways.—Kind of Doors, and Fixings.—Have the doorways seven feet high, and about four feet six inches in width. The doors should either be made to slide, or—what perhaps is better—should be made in two halves, and the hinges fixed on the outside. Should the stable, however, be large, and it be considered desirable to give a neater finish, have the chief entrance door of that form which may best suit the general design of the building. Have it of the size stated.

The doors of all loose boxes should be suspended so as to open on the outside. If made to open within, they not only do so against the litter, but they frequently prove in the way when horses are brought out; and unless great care be taken serious consequences may ensue from the animal rushing against the projecting edges.

The sides of the doorways (door jambs, as they are called in Yorkshire) should be *rounded* where the edges usually are, to prevent a horse, when going into the stable, or when coming out, from injuring his hips, should he make a rush, or become alarmed during the act of passing through the doorway.

IV.—WIDTH AND LENGTH OF STALLS.—THEIR CONSTRUCTION AND FURNITURE.—Stalls, where space of ground will allow, should be six feet in width; but certainly not less than five feet eight or nine inches. What is meant by height of stall, is simply the height from the ground to the top of the stall partition at its highest part. Seven feet six inches, at the highest part, is abundantly sufficient for the largest-sized horse, and about six feet at the lowest end. For my own part, I like to see a nice finish given to a stall, especially in the form of its post. Have the sides of the post octagonal, and its top terminated by a tastfully formed head. I am aware that stall-posts with turned tops have been considered dangerous: horses, it is stated, have been known to kick themselves across, and have thereby become ruptured in the flank. Such accidents, however, are exceedingly rare; and the possibility of their happening will be altogether prevented by having the stall partitions of the height specified above.

A common practice with many, is to have the stall-post to proceed from the ground up to the ceiling. This is objectionable on two grounds:—it looks ugly; and a large-sized horse

placed in the stall, and made to turn quickly round, would be very liable to strike his head against it, and possibly damage an eye, or knock out a tooth. Accidents of this nature have occurred, but by judicious arrangements they may be entirely prevented.

The stall partitions should consist of boards four or five inches in width, and about two and a half inches thick. They should not be tongued and grooved, but simply fitted close and compact to one another. The lower end of the boards should terminate in a groove cut in a stone fixed deep within the ground; the stone descending at least to the depth of from two to three feet. The top of the boards should be made secure, by fixing them into a strong oak or ash capping, having a deep groove on its under surface to receive the boards. The ends of this capping should be made secure by passing one (the top) end into the wall, and the other (the lower end) into a mortice situate near the top end of the stall-post. The capping should be made to descend, with a graceful curve, from its upper to its lower end, as it adds to the appearance of the stall. The stall-posts should descend into the ground from three to four feet, to keep them firm and secure. Before the posts are fixed in the soil, they should be well *charred* in those parts which are required to be buried or sunk: it will prevent the timber from decay. Charring will be easily accomplished by means of a bonfire. When charring is not practicable, a free coating of well-boiled gas tar is the next best preservative from decay. The advantage of having the boards forming the stalls simply placed side by side is obvious: if one becomes broken or splintered from a kick, it can be easily removed, and another fixed in its place. The length of the stall partitions, from the back of the manger to where the boards join the stall-post (that is to say, the length of the stalls from the hay rack to the heel post behind,) should be nine feet.

FURNITURE OF STALLS.—By furniture of stalls is meant Hay Rack, Manger, Head Collar, Roller, Pillar Reins, Clog, Rack Chain, Setting of Stalls, Grate, Urine Channel, and False Bottom.

The Hay Rack should in part consist of oak, and in part of pine. The frame of the rack and the rollers require to be of hard wood, as they are the most subject to wear and tear. From the front of the hay rack to the wall behind, against which it s fixed, there should be a width of thirty inches. The bottom of the rack should consist of a one-inch board, numerously pierced with holes. This board should be inclined from the wall to the front of the hay rack, so that the hay will fall forward; while the holes are necessary to allow the seeds to drop into the unoccupied space below. It is seldom that hay racks are made so wide as here recommended; but the advantage is, that it allows of a boy to go behind the wood-work, and remove the seeds which from time to time collect; and also to thorougly clean away other accumulations, which if permitted to remain, may become deleterious to health.

The Manger should be made of ash, (or of any other close, hard-grained wood,) with an oak capping, fixed to and along its upper edge. The bottom of the manger should resemble the bottom of an oblong pie dish. Mangers are usually made with square corners: this form favours the accumulation of dirt. The depth of the manger should be twelve or fourteen inches, particularly if the bottom be made of the form recommended. The width of the manger at the top (that is at the broadest part) should he fourteen inches. The oak capping will need to be firmly fixed, as horses frequently bite it with great violence. Some horses have the habit, when eating, of throwing the corn out of the manger: to prevent this, place rods of half-inch iron firmly across the top and at intervals along the entire length

of the manger, so as to divide it into several spaces; this will prevent the evil, and consequent loss of food. The iron rods do not require to be more than fourteen inches apart from one another. Avoid covering the outside of the manger with sheet iron, tin, zinc, or in fact with thin metal of any kind. In course of time these metals wear away in certain places, the broken portions become elevated, thus presenting sharp edges, against which a horse may tear and lacerate his skin. Besides it presents an ugly appearance, and in no way is it of benefit. The height of the manger from the ground should be about three feet seven or eight inches; and, as a rule, from the top of the manger to the top of the hay rack should be the same distance.

Head Collar.—Head Collars are of various kinds; but the most preferable is the old-fashioned one of all, such as is exhibited in the annexed engraving. Experience has proved them to be the most secure, and in appearance they are quite as neat as any of the newer styles. Going from the head collar, and firmly attached to its lower part, is the *shank*, which is sometimes a chain, sometimes a rope, and at other times a long piece of flat leather.

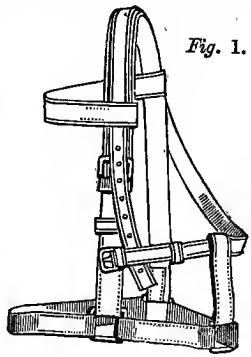


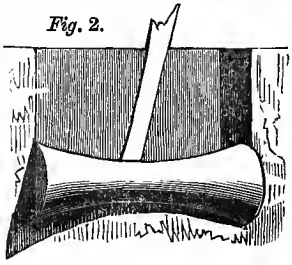
Fig. 1.

Chains are disagreable from the rattling noise they make when moved: nevertheless with some horses a chain is indispensable. A rope or a leathern shank they will bite to pieces, and thus liberate themselves; while, apart from this, rope is not altogether safe, as it is apt to chafe and break. Leather, as a rule, is the best of all: it moves through the ring or roller at the bottom of the manger evenly and without noise. It also wears the longest, because it suffers the least from friction. One shank

is sufficient; more than one is not only unnecessary, but at times even dangerous. A horse, when biting a hind leg, may get the foot over *one* of the head collar shanks, (when two are used) and by this means the animal may be cast in the stall, and death speedily ensue unless assistance be at hand. I remember two instances where valuable horses died in consequence of being so caught.

The Roller.—The Roller is the part *over* and *behind* which the shank passes, to make the horse secure in the stall. The proper place to fix the roller is the central part of the manger, near to its lower edge. It is usual to fix an iron ring to this part, but it neither looks nor acts so well as a roller. The form of the Roller should be as represented in the accompanying engraving.* Its length should be about twelve or fourteen inches, and the diameter at its thickest parts four inches. Some horses have a practice of becoming entangled with a fore limb in the head collar shank; they seem to take a delight in the practice; and many are the contrivances to prevent them. The most simple plan is to box the shank from the top edge of the manger down to the ground, leaving, of course, a small opening or door at the bottom, so that the clog or weight can be got at when desired. If the plan described should not succeed, it will be necessary to box the collar shank against the *side* of the stall, as close to the front of the manger as the boxing can be fixed. Such boxing will require to rise from the floor to about fourteen or eighteen inches higher than the manger. The collar shank

Fig. 2.



* The Roller is made thicker at each end, by which means the collar shank will always work in the middle.

will of course require to be of an additional length, and the clog heavier in proportion. The adoption of this simple plan will effectually prevent the practice, as the shank (if the clog be sufficiently weighty, and the roller moves with freedom,) will be completely out of the way. Finally, from the form of the roller, and the position of its fixings, the whole will project further from the front of the manger than a mere ring; and such projection is liable to be in the way of the knees of the animal. This is objectionable for many reasons; but it admits of being easily obviated. Make a false front to the manger, by fixing with screws a few boards to the real front. The roller will then work in a recess, and be entirely out of the way. Indeed, if it be desirable, the roller may be covered, merely leaving an opening above and below, to allow of the collar shank to pass in and out. The securing of the false front with screws will at any time allow of its being readily removed and replaced.

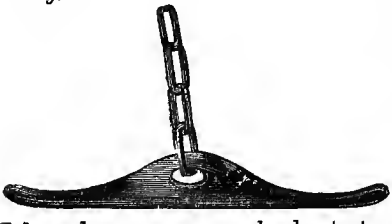
Pillar Reins.—Pillar Reins are used for the purpose of fixing a horse temporarily in the stalls. It is usual to fix these appendages to the stall-posts; others, prefer having them fixed to the sides of the stall, midway between the stall-post and the manger. The best place however, to have them, is at the stall-posts. Horses, when turned round in the stall, cannot kick each other, and they admit of the animals being more readily led out of the stable. Each pillar rein should terminate with a *closed* spring hook. They secure the head more effectually, and they cannot at any time become fixed into the limbs of the animal. These pillar reins should be of chain, formed of small but strong links. They are the most durable, and the least frequently out of repair.

The Clog.—The Clog is a round ball, usually made of wood or iron, and is used to weight the shank of the head collar. The iron clog is preferable: it occupies less room, and is not so liable

to split as a wood one. The clog should weigh from two to three pounds; and if required for a very long shank, it should be at least a pound heavier. The proper length of the head collar shank, available for the animal's use, can be determined by the following very simple rule:—bring the chin of the horse to the top edge of the manger; pass the loose end of the head collar shank through the ring, or over and behind the roller fixed at the bottom of the manger; hold the head of the animal firmly, and let the whole length of the shank pass downwards; and that part of the loose end which lies upon the ground (if any) is more of the shank than is required: all additional length, (or length not upon the stretch when the chin of the horse rests upon the manger,) is dangerous. It is obvious that when the animal is laid down, and the head flat upon the straw, the clog will be drawn close to the roller, and that when the animal stands up the head may be moved upwards and downwards and laterally with the greatest freedom. All length of collar shank, we may again observe, in addition to the length stated, is unnecessary, and may be the cause of mischief from becoming entangled amongst the limbs.

Rack Chain.—The Rack Chain should be eighteen or twenty inches in length. One end of the chain hangs loose, while the other is made secure to the wood work a little below the bottom of the hay rack. The loose end of this chain should terminate as shown in the annexed engraving. It is a common practice to have a hook in place of the end as represented; but a hook is dangerous, especially to young horses. I have known common hooks to tear the lips and the eyelids

Fig. 3.



and split open a nostril. Accidents of this kind, however, cannot occur if the chain terminates as shown above; at least they cannot be supposed so likely to occur.

SETTING OF STALLS.—The stalls should be set with good, hard eight-inch sets, which should be placed in clay puddle, and fitted to each other in lime, and after the whole is dry and properly settled, the interspaces should be filled with boiling asphalte.

The stall should rise about three inches, from the heel post to underneath the manger, in stables where it is intended to put down false bottoms in addition; but where these are not intended to be used, a fall of one inch will suffice. Where it is intended to put down false bottoms to the stalls, and such false bottoms to be placed above the sets, the manger will require to be placed higher from the ground than stated. In the latter case, the height of the manger should be measured from the top surface of the false bottom. Running up the centre of every stall should be a channeled stone, to conduct away the urine. These channels should all terminate in one broad channel, running the entire length of the stable. Into this long channel, or main stable channel, should be placed *iron grates* to allow of the urine passing off into the drains beneath. One iron grate to every second stall will be ample. Avoid placing these grates in the middle of the stall-way. Place them opposite the stall-posts, where they will be out of the way of the feet of the horses. The urine grates should be made of wrought iron, eight inches in length, perforated with a number of small holes, and of the width and form of the channel they are fitted to. Each grate should be fixed by means of a strong hinge. The main urine channel, or the one running the entire length of the stable, should be six inches broad, and about one inch and a half in depth. If it be desirable to give greater

certainty of fixedness to the urine grates, short bars of iron can be placed immediately over them, and soldered into the stones below. Imperfectly fixed or loose urine grates are sources of great danger.

FALSE BOTTOM.—A False Bottom to stalls, is constructed entirely of strong timber, of the form represented in the annexed engraving. It is shaped as follows: its base consists of four pieces of strong timber, or sleepers; each piece at least four inches square, and about one foot longer than the length of the stall. The four pieces of timber are arranged as in the annexed engraving, viz., one piece within, and on each side of the stall, close to its woodwork; and one piece on each side of the urine channel (that is, the channel passing down the middle of the stall). Running across these sleepers, or in the opposite direction, are boards of the same length as the stall is wide. These boards must be four inches in width, and not less than two inches in thickness. They are to be fixed firmly down to the sleepers by means of screws, and placed half an inch apart from one another. The number of cross pieces required, will of course depend upon the length of the stall, and the distance they require to be taken in a backward direction, so that the animal can at all times stand or lie upon the false bottom. The foregoing directions relate to the construction of the false

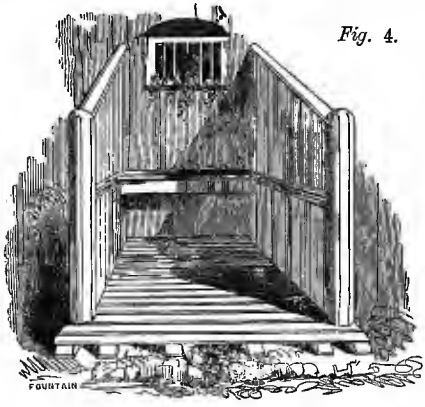


Fig. 4.

bottoms, where it is determined to use them upon the floor of the ordinary made stalls. But a better plan would be, to sink the paved and channeled floor of the stall so as to receive the false bottom, which can be readily done by making provision for the proper junction of the channeled stone in the centre of the stall, with the drains of the stable. Where these are sunk, and the false bottom in its place, the stall would present its original level, neither would there be any step as would be the case, when the false bottom is laid upon the ordinary floor. It would also be well if the false bottom should fit somewhat loosely, so as to allow of its ready removal, for the purpose of washing and cleaning the floor beneath, and it would be better still to have the false bottom made in three portions, each portion so fitted to the others, as not to allow of its being accidentally displaced. If the false bottom be laid down without the floor being first sunk in the manner here spoken of, have it simply of two halves, and make it so secure, that the lower half cannot slide away from the upper one. In any case, by having the longitudinal timbers or sleepers thicker at their lower end, it will be very easy to throw the stall *level*, instead of following the slope of the floor beneath; the increased thickness of course depending on the degree of fall the stall possesses.* On no account need the cross boards be more than half an inch apart from one another. This space is amply sufficient to allow

* The late Mr. James Young, livery stable keeper, of Leeds, adopted these false bottoms to a twelve-stalled stable, and the following is his description of the process. The cross boards to be made of elm, six inches broad, two inches thick, and one inch apart from one another. The back or bottom cross board to be bevelled, to prevent the horse when walking into the stall from catching his toe and tripping in consequence. The ground sleepers should be the whole length of the stall, from wall to outside of gutter, and made of larch or oak, two inches thick, and four inches broad. If the stalls be wide ones, four sleepers will be required. The cross boards to be nailed on with what is called diamond nails, four nails through into each sleeper.

of the urine to flow readily away; all additional space is not only unnecessary, but might result in the foot of the horse becoming entangled amongst the bars. The advantages arising from the use of these false bottoms are numerous. In the first place, they save the litter; and this, when straw is purchased for a considerable number of horses, will be found to be something very considerable, particularly in seasons of scarcity and consequent dearness. Secondly, they present a safer footing to horses. Thirdly, they allow of the stall to be made perfectly level, and so take away that peculiar mode of standing, so painful to a horse, when confined for some time within a sloping stall. Fourthly, they render the stall warmer in winter, and cooler in summer. And lastly, it is found by experience, that where they are in use, the inmates rest better than when placed within the ordinary stall.

These false bottoms will require to be lifted from their position at least once a week in winter, and twice a week in summer, and the floor beneath to be washed of all its accumulated impurities, as well as the false bottom also. It is impossible to overrate the advantages of cleanliness in the stable; and unless this be carefully and regularly attended to, the stable will become unhealthy. Mere brooming is not sufficient to secure complete cleanliness; there should be water and frequent washing.

GANGWAY.—It has been previously stated that the width of the stable within, should be twenty-two feet. Divide this space as follows: viz., two feet for breadth of hay rack; nine feet for length of stall; three feet from the bottom of the stall post to the inner border of the main urine channel; six inches for the width of the main urine channel; and seven feet six inches for width of gangway, and we obtain the relative sizes of every part. The space between the stall post, and the border

of the main urine channel, should be set with eight inch sets, the same in fact that are used for setting the stalls. The urine channel is next to be laid down, and the remaining space covered with larged-sized flags, three and a half inches thick, and having a roughened surface. It is best to bed flags in lime, and what in Yorkshire are called scraplings. Ashes are not so good: they imbibe and retain moisture; and they also favour the propagation of black beetles, and other insects of a disagreeable kind. Where it is desirable to give a more complete finish to the interior of a stable, a plinth, eight or ten inches deep, may be put down along the bottom of the wall; this plinth should be made of Roman cement, it being cheaper than wood, and far more durable. The window backs may also be lined with boards, and a cornice run along the top of the ceiling. In short, where expense is not regarded, the taste of the owner may direct itself in a thousand ways to beautify the interior.

V.—Ventilation of Stable.—In treating upon the ventilation of the stable, it is taken for granted that every thinking person must be perfectly aware of the necessity for a regular and copious supply of pure air, for the maintenance of the health not only of ourselves, but of the lower animals also. This, although admitted as a fact, and not unfrequently theorized upon, is yet very far from being adopted in practice to the extent which might be anticipated. People continue to build dwelling houses for themselves, and stables for their horses, as though totally unconscious that those destined to live within them will require such a very necessary element as air. The capacity of the lungs of the horse is enormous. He requires a large amount of pure air to thoroughly purify the blood. Bad ventilation is the cause of innumerable diseases; and where it does not directly cause disease, if a diseased

animal be subjected for any length of time to its deleterious influence, matters become worse, and serious aggravations of the malady result. Glanders, one of the most loathsome, infectious, and incurable forms of disease to which the hores is subject, frequently arises from bad ventilation. Horses when on ship-board, have become glandered from simply shutting down the hatchways during the prevalence of a storm. Epidemic Catarrh, is another form of disease familiar to most men who own horses. Glanders is a common sequence to this malady; and the same may be said of Scarlatina, Typhoid Pneumonia, and Coughs of a very obstinate nature. Such sequences, however, are not common except in stables that are badly ventilated. No surer indication, in a general way, of a badly ventilated stable, than where scarlatina readily supervenes upon catarrh, or where obstinate coughs remain after its inmates have suffered from the epidemic forms of the disease. Another sign—alike indicative of uncleanliness and bad ventilation,—is where the paint upon the woodwork of the stable takes on a dull leaden colour. This is a common effect, and one readily seen by an observer.

Best Mode to obtain thorough Ventilation.—By thorough ventilation is meant, *a constant supply of pure air, in quantity sufficient to disperse that which is impure in any apartment into which it may be admitted, and in which gases are generated unfit for the healthy maintenance of life.*

Several modes are in use by which air is admitted into stables to effect this purpose: sometimes it is done by a moveable trellis fixed in the lower half of the window—sometimes by openings cut through the wall either in front of, or behind the horses. In short, it is sought to be done by any mode or contrivance, just as chance may hit upon, or necessity at the moment may devise. We cannot ventilate an apartment without the admission of air. The difficulty is, to admit the air in

a manner which will not prove objectionable. Cold draughts are very objectionable. The supply of air within the stable should be regularly and equally distributed. A very excellent plan to effect this is pursued by Mr. Watson, of Halifax. This gentlemen, by his process, has ventilated numbers of stables, many of which I know where the mode in question answers admirably. The plan he adopts is at once simple and complete. It mainly consists of a large tube, which is equally divided within, from top to bottom. This tube descends from above the roof, down through the floor or ceiling of the stable; at the bottom of the tube, two trap doors are secured by hinges to the central division. The doors are constructed to move by the aid of cords and pulleys, and being opened either wholly or in part, a double current of air is established; or in other words, the bad air is made to ascend and depart, at the same moment the pure air descends, and diffuses itself through the stable. Thus a gentle, but perfect interchange of good and bad air is effected. The expense attending the fixing of Mr. Watson's apparatus is not excessive; and where a permanent improvement of the kind is necessary, and about to be effected, perhaps his plan will be the best to adopt. It is also to be strongly recommended on another account, that it does not readily work out of repair.

If the premises are favourably situate, good ventilation may be effected by the following mode, one equally simple as the above recommended. Make an opening ten inches square through the wall in front of the heads of the inmates. Make it behind the woodwork dividing the hay racks from one another, or immediately behind where the divisions of the stalls commence. One opening in the position named, and of the size specified, will be sufficient to afford air for a single horse. To modify the current, and prevent the entrance of foreign bodies from without, place an iron grate against the

outside of the opening. Where it is impracticable to cut through in the manner directed, the difficulty may be obviated by carrying tubes made of iron or wood, through the roof, taking care to cover the upper opening of the tube with perforated caps. A corresponding number of openings of the same size are next to be made through the wall *behind* the horses. These openings must be cut within a few inches of the ground, and protected by grates fixed on the outside, as directed above. Each opening must terminate in a square tube, placed within the stable. Each tube must be five feet high, having an upright position, and secured to the wall by means of holdfasts. They should be five or six inches square, having three sides of wood, the fourth being formed by the wall against which they are fixed. On the top of every tube, fix a thick plate of zinc, well perforated with small holes. Should these tubes admit more air into the stable than requisite, slides of wood may be inserted in place of the perforated plates, and the air currents checked either wholly or in part. The above is a very excellent plan to ventilate a stable; but stablemen require watching, or many of them, unless prevented, will keep the tubes permanently closed. They want a close stable, and they cannot be prevailed upon to adopt any other method.

VI.—DRAINAGE OF THE STABLE.—A stable to be free from bad smells arising from the decomposition of urine, and other offensive matters, must not only be thoroughly ventilated, but thoroughly drained also, and the drainage conducted to some distance from the premises. I have elsewhere described the position of the various surface channels, for conducting the urine into the underground drain. Below the main surface channel, and in a line parallel with it, place the underground drain. Joint aud socket pipes are the best for small drains.

Care must be taken in putting down the pipes, to ascertain that they are evenly placed, that the joints are well cemented, and that a sufficient fall be given to allow the urine to run freely away. Wherever the urine passes into the underground drain, let it do so by means of a trap. Traps of the proper kind can be procured from those who supply the joint and socket pipes. Traps have a twofold use: they prevent any back stench which may arise, and they prevent rats from attempting to enter the stable through the urine grates, or where the traps may be fixed. All the openings leading from the surface channels into the underground drain should be covered with suitable grates. The proper place to fix such grates is described at page 13.

The underground drain should terminate in a tank, if it be desirable to preserve the urine for manure. The loss of manure arising from the want of tanks is incredible. Possibly a time may come when people will look to these matters somewhat differently.

APPENDAGES TO STABLE.—A Stable, to be complete in all essentials, will require the following, viz., Hay Chamber, Corn Chamber, Loose Boxes, Saddle and Harness Rooms, Coach House, Porch, Washing Room, Manure Depôt, and Water Tanks.

Hay Chambers.—Hay Chambers have been frequently condemned, but without due consideration. If properly constructed I cannot see the force of such objections as are generally urged against them. They should be lofty, moderately lighted, and counter-floored. Counter-flooring the chamber is very necessary where a portion of the room is required as a dwelling for those employed within the stable. It prevents noise, and the descent of dirt into the stable beneath. The openings through the floor to admit of the hay being put into the racks, should be

provided with covers of wood to exclude the descent of cold draughts in winter, and the ingress and egress of cats. The principal objections to hay chambers are, the disturbance arising to the horses from the running to and fro of cats; the noise overhead, arising from the necessary movements of the people living above; and the descent of dust. In order to prevent the first, do away with the openings above the hay racks, and make a large trap door in one corner of the ceiling, through which the hay can be let down from above, when required, into a corresponding division upon the floor in the corner immediately below. The second and third objections are readily set aside, by counter-flooring the chamber, and by having the entrance to the dwelling department distantly situate from the stable. Without these arrangements, I admit that stables are better without hay chambers; but with them, advantages are obtained which are worthy of consideration. Less hay is wasted, the hay is more convenient for immediate use, and the stable is thereby made warmer in winter, and cooler in summer.

Hay Chambers do not require to be plastered. If the walls are occasionally lime-washed, it will prove sufficient. They will, however, need ventilation. This may be done by openings through the walls, or by the adoption of openings, and wooden tubes of the size and kind already described.

Corn Chamber or Granary.—Respecting a Granary, little will be stated upon the present occasion. Where a number of horses are kept, a granary is indispensable. The apartment should be constructed in a compact manner, otherwise rats will gain access to the interior, and destroy the grain. The size of the room will of course be determined by the extent and requirements of the establishment. A granary should be a clean, dry, cool, moderately lighted, and well ventilated apartment.

Loose Boxes.—Loose Boxes may be put down as indispensable to a large stable. They possess numerous advantages. To a wearied horse they afford more room than a stall. They are hospitals in which to place sick horses, with the additional advantage of enabling sick animals to be separated from the healthy, should there be an epidemic disease or an infectious malady of any kind amongst the stud; and where horses are intended to be thrown completely out of work, and yet be confined, loose boxes will afford greater freedom to the animals within.

Where room is a matter of importance, the stalls in the stable should be so constructed as to throw two into one, and thus a box for temporary purposes may be readily obtained; but where room is not a matter of importance, it is better to have the boxes situate apart from the stable. The directions given with regard to the construction of the stable, are to be observed in the construction of a loose box. The place requires lighting, paving, ventilating, and draining. Like the stable, loose boxes, when practicable, should be built to face the south. The windows may be placed above the main entrance; they are then clearly out of the way of any mischievous animal which may be placed within. Make the entrance door to a loose box six feet six inches high, and four feet wide. Let it be hung on the outside, or so as to open *without*. It should also be divided transversely into two portions. Have the lower portion four feet high. Let the length of the apartment be nineteen feet; its width, fifteen or sixteen feet; and its height ten feet. A part of the room may be used as follows:—at the top, take six feet, which appropriate to the furniture necessary to the box. In the first place, fix a strong wooden apparatus, divided in a similar manner to that shewn in the adjoining engraving, and the one at the end of this section, viz.,—one

division for the hay; one as a manger; and if desirable, one as a water-trough. The height of this apparatus will require to be about four feet; the width, two feet six or seven inches, including the width of the boards composing it; while its length must extend from one side of the box to the other. The division intended for the hay, to occupy the entire width of the feeding apparatus. Perforate the bottom of this division with half inch holes to allow the hay seeds to escape below. The front of the apparatus may be made either as a regular hay rack, or plain, according to the taste of the owner. If made plain, the front should consist of battens, two and a half inches thick, four inches wide, and fitted closely to each other. Battens of the same width and thickness should extend around the box, except in front of the end wall behind the feeding apparatus.

The object in lining the apartment in the manner described, is to render it warmer, and give completeness of finish throughout. The battens lining the walls to reach six feet in height, to be capped with oak along the top, and secured firmly to the walls by means of wooden plugs. The floor to be paved with eight-inch sets, or the best quality of bricks which can be purchased; or, if it be desirable to have a false one, it can be effected in the way treated upon at page 14. Plaster the ceiling, and the parts of the wall exposed, or free from battens. Drain well. Ventilate effectually; and in fitting up or furnishing the box, be certain that every part is free from hocks, projecting bodies, such as door latches, the ends of nails, and all articles of a like nature. Horses, whether young or old, when at liberty, particularly if over-fed and under-worked, are continually smelling and playing with anything that comes in their way, thereby not unfrequently (and perhaps permanently) injuring themselves, besides laying the foundation of a long veterinary bill.

By this simple arrangement, a loose box is secured, containing thirteen or fourteen square feet of room, available for a horse. The space behind the Feeding Apparatus, can be used as a receptacle for hay, and it may be readily entered by means of a door fixed in one corner as shown by the accompanying woodcut. The number of loose boxes necessary to a complete establishment, will of course depend upon the number of horses kept; as a general rule, however, one box to five or six horses will be sufficient. In breeding establishments, a much greater number will be required. It is common to have iron racks and mangers to loose boxes. These are objectionable. A horse feeding from one fixed against the wall, will generally have the head, neck, and mane covered with hay seeds and dust. Hay seeds not unfrequently drop into the eyes of the horse, and occasion inflammation of these organs. Iron work is also very apt to rust; in fact iron racks are objectionable in every way. The feeding apparatus here described is the cheapest, and will be the most durable.

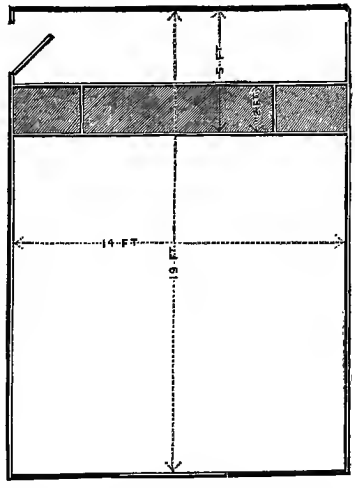


Fig. 5.

Saddle and Harness Rooms, and Coach House.—These appendages I shall treat upon in a very brief manner. In making arrangements for the Saddle and Harness Rooms, and for the Carriage House, one of the principal matters is to have these apartments so situate as to have no direct or immediate con-

nection between them and the stable. Where these places are open to one another, the dirt and steam occasioned by the necessary operations going on within the stable, particularly in bad weather, occasion much unnecessary labour in the harness room and the coach house. The saddle and harness room may be placed at one end of the building, and the coach house at the other. This arrangement will aid in keeping the entire building more dry and comfortable. The harness room should be lofty, the floor boarded, and the apartment well supplied and fitted up with closets, cupboards, and drawers, to hold harness, horse clothing, bandages, wash leathers, sponges, halters, and in fact a regular supply of extra things necessary to meet the requirements of the establishment.

The Coach House should be roomy, well lighted, and well supplied with fire ranges. The floor should be boarded or otherwise covered with a false bottom, in a similar manner to those used for stables described at page 14.

*Porch and Washing Room.**—Every stable should have a Porch, if practicable. It is useful in a number of ways. Horses can be cleaned in it. It affords shelter to the horses either in hot or cold weather. It is convenient as a place to perform many of the minor operations in, such as paring a foot, setting on a shoe, brushing the legs in dirty weather, and many other duties of a like nature. A good stable cannot be considered as complete in its appendages, without a commodious porch.

Wash House.—Behind the porch, or in any other position the most convenient, should be a Wash House. A room, in which may be done the rough work of the establishment, such as washing harness, horse clothing, bandages, and the horses also when necessary; also cooking food for invalids, or such horses as may require it. The wash room will need

* See Frontispiece.

to be a commodious apartment. The floor should be paved with three or three-and-a-half inch flags, and so constructed or provided with surface water channels from every side, that the water will run to the middle of the room into a shallow dished flag, provided with a grate to let away the fluid into a commodious drain beneath. In fixing upon the situation of the wash room, the following matters should be taken into consideration: 1st.—To place the room, that a horse can be led out of it into the stable without being under the necessity of going out of doors. 2nd.—To arrange matters, that the steam and dust arising within the place cannot pass into the stable, coach house, or harness room.

Manure Depôt.—Manure Depôts, unless properly situated, are certain to prove a nuisance. If placed near to the stable or any of the loose boxes, they attract swarms of flies in summer, and these to a horse, either in health or in sickness, are an intolerable annoyance. Have such depôts altogether away from the premises, if practicable. The manure should never be allowed to accumulate near to the stable: it is best to remove it daily.

Water Tanks.—Pure soft water is essential to horses. Hard water is unfit for regular use. Horses which regularly partake of hard water, are liable to suffer from colic, and from the production of intestinal calculi. Every stable should be provided with an ample supply of soft water. Tanks to contain water are best when made either of stone, or wood lined with blue slate, and the joints made waterproof with a cement consisting of two-thirds black pitch, and one-third gutta percha melted together, and applied hot to the joints.

In addition to the essentials already named, attention must be given to one or two others. Dampness is one. Avoid if possible a damp stable. It is most destructive to the health of

the inmates. Horses kept in damp stables are more prone to Opthalmia, Grease, Pneumonia, Chronic Cough, Broken Wind, Rheumatism, and states of general debility, which of course predispose horses to every form of disease. Dampness may arise from a variety of causes. Firstly, if the stable is closely surrounded with trees, dampness of the interior will be inevitable. Secondly, dampness may arise from imperfect ventilation. Thirdly, from bad drainage. Fourthy, from the want of sufficient light. Fifthly, from having one or more sides of the stable built against ground which slopes towards the wall. And lastly, from all these causes acting in association. To remedy dampness in the stable, the proprietor should closely examine into its causes, and remove them, so far as practicable, at once.

Warmth of stable is indispensable to high bred horses, and horses of great value. Warmth without good ventilation is injurious. Warmth, with good ventilation, are associates to be desired. The temperature at which a stable should be kept will depend upon circumstances, such as the breed of the inmates, and the peculiar uses for which they may be required. Common bred horses, and horses of a very robust nature, do not require so warm a stable as do those horses kept for racing, steeple chasing, or hunting purposes. A temperature ranging from 60 to 64 degrees Fahrenheit, will generally be found of sufficient warmth for most horses. If greater warmth to the inmates be desirable, it can be effected by additional clothing, a mode to be preferred to that of increasing the general heat of the stable.

Size of Stable.— By Size of Stable is meant the number of horses the stable should contain. Most horsemen who pride themselves upon their knowledge of these matters, are opposed to the congregation of a large number of horses in one apartment. Some state eight stalls in one stable as the maximum;

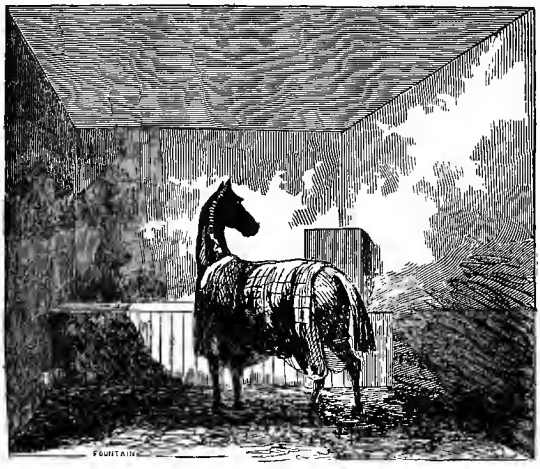
seven of which are to be occupied each with a horse, the other to be used for the larger utensils of the stable, such as buckets, shovels, forks, and brooms. Others, again, state three stalls as the maximum. A medium, however is the best, say from six to eight. Whatever may be the size determined upon, it must be borne in mind that the larger the number of animals kept together, the greater the necessity for efficient ventilation.

In conclusion, we may sum up our remarks as follows. He who requires a first-class stable should construct it upon the principles herein laid down, and which I may again recapitulate in a very brief manner. The stable should be situate upon rising ground, its aspect should be direct south, it should be well lighted, and the ground around it free and open. It should be eleven feet in height, and twenty-two feet in width, within the apartment wherein the horses are kept. Its principal doorway should be seven feet high, and four feet wide, and the door should open well back within. The stalls should be six feet wide, and furnished with all necessaries. The stable should be well ventilated, and well drained; and it should possess all the appendages named, because they are valuable to the comfort and to the welfare of the animals, and also at all times to those having the care of them.

Architects may ornament to the utmost of their ability such buildings as they may be commissioned to superintend, but unless the natural requirements of the living are considered;—unless the existence of lungs, eyes, and digestive organs, are acknowledged, and their functions provided for sanitarily, the builder achieves but a fraction of what he ought to accomplish.

The generality of matters essential to the stable, and the comfort of the horse, are here treated upon. The plans herein recommended, if followed, will make a substantial stable.

Where expense is not considered, beauty may be given to the fabric in numerous ways. I go upon the principle, however, of first securing the essentials which are necessary, and then proceed to ornament as taste may dictate, and the pocket allow. Let us at all times cultivate what is beautiful, but let us have what is useful in association with it.



Section II.

ON FEEDING HORSES.

HAY.	CHAFF CUTTERS.
CLOVER HAY.	BEAN FLOUR.
OATS.	LOCUST.
BEANS.	GREEN FOOD.
OAT CRUSHERS.	WATER.

How must I feed my horse, and what is the best plan to pursue with regard to his diet? are questions frequently asked by the inexperienced. To the enlightened owner, or intelligent groom, however, the answer will doubtless appear simple and obvious. The novice may be at a loss to understand them.

To learn the common requirements of a properly conducted stable, as for instance, how to distinguish good fodder from bad; how to feed horses; to know the kind of food which may be suitable for one horse, and not for another; the best modes of cooking food for horses, when cooked food is necessary; how to diet and manage a horse, known as a *delicate* feeder; how to diet a sick horse; or to recognize when a horse is well groomed, properly shod, and to judge as to whether his saddle, bridle, and harness properly fit, so that the animal may travel with comfort and perform his labour efficiently,—are matters of great importance; a knowledge of which, on the part of the novice, is not to be attained unless by his regularly aiding in the performance of its numerous duties, and the general cultivation of his observing faculties.

It is held as a rule, *that no one can tell when a horse is properly groomed, except he can groom one himself;* a statement I believe to be true. "Learn to do the work yourself, then you will know when it is properly done," is a proverbial axiom of wide significance. To those, however, who cannot devote the necessary time to undergo the practical ordeal which this axiom involves, or who are otherwise inclined, certain things relating to these matters may be learnt from the present treatise; which, as regards ordinary experience, may prove amply and generally sufficient.

The keep necessary to be afforded to a horse, will depend upon a variety of circumstances, the nature and extent of which, if fully stated, would occupy a volume. The kind of horse is one thing, and the class of work he is required to perform is another. Our remarks, however, will be limited to the feeding and general management of hunters, hacks, and harness horses.

To enable the reader of the present work to understand the importance of proper feeding, it will be as well for him to understand, as far as possible, the principles upon which true hygienic rules are based.

"Mere rules," says Combe, "may be apprehended and practised by ordinary minds; but to understandings ignorant of their foundations and sanctions in nature, their importance and authority are far from being so evident as to carry with them a deep sense of obligation." With the view set forth, and in the spirit expressed in the above quotation, I shall attempt a brief exposition of those principles upon which correct rules for the dieting of horses naturally depend.

And firstly, it may be asked, What is Food? What are its uses? and, Why is it necessary? The first part of the question I shall dismiss in a very brief manner; while the answer

to the second, will in a great measure comprehend the answer to the third.

What constitutes Food? We shall the better understand this question, if we consider the wants and the requirements of the animal.

The organism of the horse is of a most elaborate and complex character. A variety of functions are performed within its interior. One of the most important of these functions is that of respiration; upon the due performance of which the natural temperature of the body mainly depends. Through the medium of the lungs, oxygen is passed into the blood; and through the agency of the blood this element (oxygen) is carried and diffused through the entire body of the animal. The action of the oxygen is twofold: it purifies the blood in the lungs, and by so doing renders this fluid in a fit state to supply the waste which is produced within the animal, by what is denominated the process of internal combustion. As the blood, however, is imbibed by the various tissues in its transit through the body, a portion of oxygen is again liberated; the direct action of which is to cause another series of effects. It acts immediately upon the old, effete materials of this complex apparatus; new compounds are formed; and it is during the formation of these new compounds, that heat is generated. Chemical action and heat are inseparable. It would appear, in fact, as though the former expended itself, and became ultimately resolved into the latter.

In addition, however, to the production of heat, from the action of oxygen upon the waste materials of the organism, the same process goes on between the oxygen and certain constituents of the food, which principally consist of carbon, sugar, gum, starch, and fat; and which either separately, or in combination, are always to be found in the food of the horse.

The quantity of these materials consumed by oxygen in the manner stated varies to a considerable extent. If the food be rich and abundant, and the work of the animal disproportionately low, the carbonaceous elements not consumed are deposited; or in other words, the animal becomes what is designated fat. When, however, the food is poor, or in quantity not too abundant for the labour performed, the constituents named are for the most part consumed, in addition to the waste substances of the body.

Food, then, to be thoroughly suitable to the animal, must possess a twofold capability. It must contain elements to supply the waste of the body generally; that is, the waste of such structures as muscle, brain, bone, skin, and other textures which enter into the formation of the animal; and it must also contain carbonaceous elements, or elements capable of uniting with oxygen, so that heat may be generated, and the temperature of the organism maintained. The food usually given to the horse possesses this double capability; hence we at once perceive that it should fulfil this twofold condition. In addition it may be remarked, that food for horses should at all times be of the best quality, and the animal continually live in a pure atmosphere. If the food be not good, neither will the various structures composing the body be sound or good; while if the animal be kept in a vitiated atmosphere, as for instance, in a badly ventilated stable, blood cannot be made of the required purity, nor can the animal heat be generated so well or so vigorously as desirable. Pure food supplied in abundance, implies purity and abundance of blood; and as a general physiological truth, such purity and abundance of blood may be held to promote the great disiderata, viz., increased vital power, and additional physical vigour to the horse.

The uses of food, and its necessity to the organism has, I trust, been clearly and simply shewn. The next things to observe, are the kinds of food best adapted to the wants of the horse, and the best modes in which to administer it.

KINDS OF FOOD.—Of the many substances used as food for horses, the following (including Water) may be enumerated as chief:—

LIST No. 1.—GREEN.

Grass	Tares	Mangold Wurzel
Green Clover	Carrots	Potatoes
Ryegrass	Turnips	

LIST No. 2.—DRY.

Hay	Beans	Linseed
Clover Hay	Bean Flour	Locust
Oats	Barley	Bran
Crushed Oats	Malt	

Green Food, or those articles of diet enumerated in List 1, I shall remark upon but briefly in the present part of the work. This class of diet is the staple article of food for young animals. It is given to horses in hard work, as an agreeable and salutary change. In like manner, and also for the same purpose, it is given, when in season, to sick and lame horses. As I shall devote a section to the consideration of such matters as relate to the hygienic management of the latter class,—the kinds of food named in this list, together with the following, viz., barley, malt, linseed, and bran, will be more fully treated upon in the section in question.

Hay.—Hay stands in much the same relation to the horse that bread does to the human species. Hay is considered at its best when from one to three years old: when good, it is known by its clear bright colour, its freedom from dust, and its

sweetness of smell. Bad hay is soft to the feel, dull in colour, smells fusty or mouldy, and readily breaks in the straw. Hay is frequently spoilt from becoming what is called mow-burnt; that is, the hay, when not sufficiently dried before stacking, becomes charred from the excessive heat generated within the mass. This charring varies from a slight tinge to an almost black colour. When the charring is but slight, the hay is perhaps none the worse; but when much burnt, it is not only worthless as food, but is highly injurious. Within my own experience, I have known horses fed upon hay in this condition become effected with chronic cough, broken wind, diabetes, and diseases of the digestive organs.

It is customary with many to chop a portion of hay, and give it with the corn. This is done with the intention of causing horses to masticate their corn more thoroughly; and, to some extent, this purpose is thereby answered; but a greedy feeder is not to be cured in this way. The corn should be crushed, or else ground in a rough manner in addition to mixing it with the chaff. The annexed woodcut represents a very effective chopper.

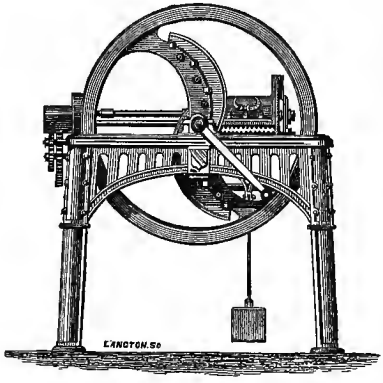


Fig. 6.

Chaff Cutters of the best kind may be readily procured, at a reasonable price, adapted either for hand or steam power, from Messrs. Richmond and Chandler, of Salford, Manchester, whose implements are held, and deservedly so, in the highest repute.

The quantity of hay which a horse may require during a period of twenty-four hours, will depend upon circumstances; such as the size of the animal, and the corn which may be allowed in addition. Some horses, having the same allowance of corn as others, will require more hay. Some again, not only consume more hay than others, but more food of every kind. Where the horse is of an ordinary size (say fifteen hands one or two inches high), the work not being severe, and the allowance of corn moderate,—such an animal may perhaps do with twelve or fourteen pounds of hay per day. There are others which will eat double this quantity, and perhaps after all not look so well as the most sparing eater. It is impossible to lay down absolute rules with regard to the quantity of food which a horse should have—so much depending upon its size, and the nature of the work to be performed.

Clover Hay.—Clover Hay is a food which is eaten with avidity by the majority of horses. It is not, however, adapted for constant use to the same animal. A preferable method is to mix it with ordinary grass hay; or, that a portion should be given occasionally. Great care is necessary in the purchase of clover hay. From its open coarse fibre it favours the collection of dust within the mass. In addition to this, great difficulty is experienced in stacking it, so that strict attention should always be paid to its condition. Good clover hay is known by its clear dark brown colour, its freedom from dust and mould, and the fragrance of its smell. Hay, and in fact cereal food of any kind, is not good, if grown near to a large manufacturing town. Soot, smoke, and other deleterious matters, which are constantly falling from the atmosphere, so injures vegetation that it is rendered unfit for food.

Oats.—Oats are given to horses whole, crushed, or ground. The crushed state is the preferable one for horses which are

greedy feeders, and those which bolt their corn. The best oats weigh about three stones, or from forty to forty-two pounds per bushel. Good oats are readily distinguished by their thinness of husk, their comparative weight, the clean colour of the outer husk, their dryness, their freedom from dust, and sweetness of smell. Bad oats, if given to horses, will prove injurious in many ways; being productive of diabetes, unsoundness of wind, and general debility. They are known by their lightness and dullness of colour, a peculiar soft, damp feel, and their musty smell.

The quantity of oats necessary for the daily support of a horse will depend upon circumstances. Some horses will perform a greater amount of labour than others with one-third less corn. Horses that eat inordinately are not always the best to get through work. Horses severely laboured require a liberal allowance of corn: they should have at least from thirteen to fifteen pounds weight of corn per day. Cab horses in well-regulated establishments are each allowed daily from fifteen to eighteen pounds weight. Hunters in full work should average about the same, including beans. The oats given to hunters are usually supplied in a quartern measure. A quartern of oats will weigh about two pounds and three quarters. Four quarterns, and frequently five, are given to each horse daily; and with every feed, a double handful of split beans. Taking the four feeds of oats to weigh eleven pounds, and the beans as three, it gives a daily average of fourteen pounds of corn: the extra quartern making up the weight a little over seventeen pounds, including the beans. This quantity of corn, let it be understood however, is not necessary except for the larger sized and more severely laboured hunters and harness horses. When the labour is easy, or the journeys not prolonged, it is desirable to regulate the quantity of corn accordingly.

By careful management a horse, under the circumstances described, may be kept upon very little comparatively speaking, and at the same time be much improved in general condition. The secret of freshening horses mainly depends upon their having good food *in small quantities at a time.* A horse of fifteen or fifteen hands and a half high, not an inordinate feeder, and whose labour is not severe, may be kept in a very efficient state upon three quarterns of oats per day, with a moderate allowance of hay in addition.

Crushed Oats.—When horses feed greedily, and bolt their corn without first masticating it, the best plan is to give the oats in a crushed state. This is done by means of a mill similar to the one shewn in the annexed engraving. Excellent mills for the purpose here recommended may be procured at a trifling cost from Messrs. Richmond and Chandler, of Salford, Manchester. They are of great service, and few well conducted stables are without so necessary an appendage.

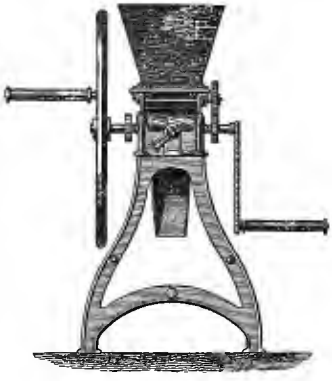


Fig. 7.

The owner of a single horse, whose labour is not severe, may find it advantageous to use a mixture of corn composed as follows:—

Crushed Oats	2½ stones.
Split Beans...	2 „
Bran (coarse)	2 „

A portion of which is to be given two or three times a day, in such proportions as that it may last eight or ten days. Should

the work of the horse happen to become more severe than ordinary, more of the corn is of course to be given. A large-sized horse, or one excessively worked, will of necessity require a larger quantity of corn during the period named. It is common to add a portion of chopped hay and a little water to the feed at the time it is given. In using the above mixture, care should be exercised in the first instance to have the crushed oats genuine; otherwise, through the nefarious tricks of the corn-dealer, the buyer may possibly find himself the possessor of ground husks destitute of meal. When, however, the oats are crushed at home, it is the fault of the buyer if he is cheated.

Beans.—Beans are considered by the majority of grooms to be stronger corn than oats; by which I suppose is meant that beans contain more nutrition than the latter. Beans are certainly specifically much heavier than oats, and this may account for the difference which is to be observed when horses are fed by measure rather than by weight. The best samples of oats will rarely weigh over forty-two pounds to the bushel, while the same measure of good beans will weigh sixty-three pounds; a difference of one-third in favour of the latter. The opinion of the more intelligent of our grooms, is to the effect that beans are more suitable for old than for young horses: in the latter the use of them is found to produce rashes upon the skin, cracks within the heels, and (if given in very large quantities) inflammation within the laminæ of the feet. Horses suddenly removed from a poor diet, and liberally fed with beans, are almost certain to be attacked with either inflammation of the feet or of the skin. Some horses cannot do with beans at all. Their use occasions disorder in almost every way. Great care is therefore necessary in using them, particularly as regards young horses, or those in a state of poverty. The usual care should be exercised in the purchase of beans: the small-sized

ones being the best; and they should be at least twelve months old, properly dried, and free from grub ravages, otherwise they certainly cannot be fit to give to horses. When beans are affected with the grub, the ravages of the insect may be easily detected. If minutely examined, when whole, it will be seen that they are perforated at the side; the perforation being round and deeply penetrating, as though it had been effected by a very small gimlet,—this being simply due to the operation of the grub, which eats its way into the interior, and in many instances destroys the entire vegetable.

Beans and oats contain similar substances, but united in different proportions. "Beans, (says Liebeg,) are proportionally much richer in bone earth than oats." "The labourers (we are told,) in the mines of South America, whose daily labour—perhaps the most severe in the world,—consists in carrying upon their shoulders a load of earth from 180 to 200lbs. weight, from a depth of 450 feet, subsist only upon bread and beans. They would prefer to confine themselves to bread, but their masters have found that they cannot work so much on this diet, and they therefore compel them, like horses, to eat beans."*

Beans when given to horses, should be split or crushed. A mill for the double purpose of crushing beans and oats, can be procured at a very reasonable price, from the eminent makers, Messrs. Richmond & Chandler, of Salford, Manchester. New beans are decidedly dangerous; and as to

Bean Flour, it is objectionable as a diet for fast-working horses. It is more suitable for cattle. It is a good deal used for draught horses. It requires to be mixed with other kinds of food, such as chopped hay, steamed turnips, and with water. Unless well moistened when given, it is liable to cake within the intestines, and kill the animal. It is much adulterated; and

* Darwin's Journal of Researches, and Liebeg's Chemistry of Agriculture.

if a large quantity be kept at one time within a narrow space, it will heat, become sour, and quickly harden into a solid mass. In short, this is not a form of diet to be recommended without qualification.

Locust.—Locust is a new article of provender, and one not generally known. It is a vegetable imported, I understand, from the Levant. It is of a dark red brown colour, and in form closely resembles the pod of the common broad bean, which is cultivated in our fields and gardens. It may be procured from the retail dealer in a very dry state. It is exceedingly sweet, such sweetness arising from the presence of sugar within its fibrous tissues. It is stated that the pod contains more than fifty per cent. of saccharine matter; the sugar in fact can be seen in a crystalized state within the cells of the pod. Before using it, the pod must either be ground into a coarse kind of a meal or broken into fragments, and afterwards steeped for some hours in water. Without the adoption of one or other of these methods, the pod, however much broken, will be found too hard and dry for eating. The effects of locust, when liberally given to a lean horse are surprising. It speedily fattens the animal, and produces that which grooms so much desire, viz., a fine, soft, glossy coat. When this food is first given to horses they generally manifest a repugnance to it, but soon look for the accustomed allowance, and devour it with avidity and relish. The proper quantity to administer for a feed will depend upon circumstances. If in a ground state, a pint of the article will be sufficient. If broken and macerated in water, from three pints to two quarts of the mash may be allowed, according to the size of the horse. The feed may be repeated three or four times a day. It may either be given alone, or mixed with any other kind of provender.

WATER.—Water is an article of diet, as necessary to the health of the body as oxygen is to the blood. Of all the articles of diet enumerated as necessary to a horse, perhaps the most important is water. This the reader will at once admit, when he is informed that, in respect of its component parts, three-fourths of the entire body of a horse are simply water. Without a sufficiency of water the animal cannot be maintained in a state of health. He will be dull, lose flesh rapidly, and become incapable of feeding. Hay and corn, and indeed any of the ordinary kinds of food, would prove useless unless a sufficiency of water be also allowed. It is most important then that the water should be in abundance, and of the most suitable kind. Pure soft water is the best for horses. Hard water is liable to produce colic. This I have witnessed over and over again. Water which contains earthy and mineralized substances in solution (and most kinds of hard water do) is apt to produce calculous deposits within the intestines of those animals regularly drinking it. A similar effect will also occur in the case of horses regularly in the habit of drinking muddy water. No better test to determine the comparative softness or hardness of water can be applied than a little soap. Hard water curdles soap; but with soft water, soap combines readily without flake or precipitate of any kind.

The quantity of water necessary to allow a horse is, of course, what the animal will drink, I mean as a general rule; but it is not at all times a good plan to allow this. Horses perspiring much from severe labour in the hot sun would, if allowed, frequently drink an injurious quantity of cold water. Horses when about to be used for the chase should have very little water given to them for some hours before being mounted. A hunter with a belly full of water in the hunting field, would be an annoyance both to the rider and to himself.

He would perspire copiously, breathe heavily, and very likely purge a good deal. Again, when the chase is over, the animal should not be immediately allowed to drink his fill of water; otherwise serious consequences might very probably be the result. Indeed horses entering the stable in a state of excessive perspiration, or exhausted from severe labour of any kind, should not for some time be allowed the quantity of cold water they would naturally drink. It is better to let them wait a short time, or otherwise to give them chilled water. Cold water is highly refreshing, and a mere mouthful or two will frequently prove beneficial. As a general rule, horses should not be allowed large quantities of water in a morning, or during the actual time of work; but when the day's work is over, and the organism cool and free from excitement, they may then be allowed to drink what water they please. Horses when allowed to have their fill of water at night, seldom require much in a morning, so that in such cases small quantities may be frequently given during the day with advantage. It is only when horses have been kept for a long time without water, and have been worked hard in the hot sun, or when perspiring excessively, or immediately after feeding, that to allow them to drink large quantities of cold water would be objectionable.

Having thus briefly noticed the principal articles of diet in connection with the feeding of healthy horses, I may conclude the present section by concisely detailing to the reader such rules regarding their every-day treatment as he may find of practical value in maintaining that health, without which, comparatively speaking, the animal is valueless to his owner.

I.—Allow your horse as much water as he will drink, or the quantity he is intended to have, prior to being fed with corn.

The reason why an obedience to this rule in the generality of instances will prove beneficial, especially with horses of delicate constitution, is obvious. The food when masticated, is passed into the stomach there to be digested, and when fully prepared to leave this organ, it does so to undergo further changes ere it becomes assimilated to the organism. In no case, however, ought the food to leave the stomach until thoroughly digested. Now water does not stay in the stomach; it immediately passes into the cœcum, where it remains in readiness to supply the wants of the system. When horses are fed prior to the administration of water, and water is freely given directly afterwards, in passing through the stomach, it takes along with it a considerable quantity of imperfectly digested food; this the delicate surface of the small intestines are not prepared to receive, and irritation of the bowels supervenes, and purging very frequently results; to avoid the disagreeable consequences of which, carefully attend to the preceding rule.

II.—When about to travel your horse a long journey, or drive him quickly in harness, feed him at least two hours before starting.

III.—If you have worked your horse, to an unusual state of exhaustion, feed the animal sparingly, for a short time, with food carefully cooked. [Further attention will be given to this rule, in the section devoted to a consideration of the proper treatment of the hunter.]

IV.—Occasionally changing the diet of your horse will prove beneficial. Carrots may be given with excellent effect.

V.—In feeding your horse with food he may not be accustomed to, but which he may manifest a fondness for,

always commence with it sparingly; otherwise colic, or disease of a more violent nature, may supervene. Grains, for example, are occasionlly given to horses, and they are also a common cause of colic when allowed to horses unaccustomed to them. Wheat is at all times a dangerous food, unless cooked. If given uncooked, it produces inflammation of the stomach or of the feet, or of both.

VI.—Generally speaking, the practice of frequently feeding your horse with good food, in small quantities at a time, is the best mode of securing to the animal its full effect. Every good groom is aware of this, and pursues the plan accordingly. It is, in fact, one of the secrets of his success.

Other essential directions relating to the dietetic management of horses, will be found in those sections of the present work which treat upon grooming, the management of the hunter, and on the dietetic management of the sick horse.

Section III.

ON GROOMS, GROOMING, AND THE GENERAL MANAGEMENT OF HORSES.

GROOMS.
STABLE TOOLS.
HORSE CLOTHING.
WET BANDAGES.
PERSPIRING HORSES.
TEMPERATURE OF STABLE.
EXERCISE.
HOURS OF FEEDING.

To groom and rightly to manage horses is a business of considerable importance. If it consisted, as many people suppose, in merely giving them hay and corn at stated intervals; in cleaning them periodically with a wisp of straw, or otherwise in performing the necessary duties, in any way and at any time, grooming would then be readily learnt, and as readily understood. A good groom, however, is a rarity. Years of practice, and a large share of experience only to be derived from such practice, are required; and in addition, that peculiar natural aptitude and love for the work, by which at all times a genuine member of the body is distinguished. Before excellence can be attained in any calling or handicraft, a man must possess that which teaching cannot impart, but upon which his success depends, viz.—*a feeling within the man that, by its force and sincerity, shall, with the aid of practice, lead him to become a master in his art.* People ignorant of the business of horse management are apt to suppose that every fellow who invests

his lower limbs in a pair of unmentionables of boundless capacity, or who wears a long waistcoat, having huge pockets of a salt-box form, is a groom. No such thing. A good groom, and an adept in his calling, is to be known by far other signs than those of his mere outward environment. He ought to possess a number of excellences. He should be quiet in his manner, clean in his person, sparing with his tongue, steady at his work, and methodical in the performance of it. He ought to be kind to his horses, and to those associated with him. In short,—a sober, steady man; respectful to his master, honest in the discharge of his multifarious duties, economical with his means and appliances, and obliging to all. It is rare, however, to meet with so perfect a specimen of the class; and fortunate indeed is the master, who may own a valuable stud of horses, should he possess such a servant. It is easy to sketch the moral outline of a model man: to procure him in flesh and blood is the great difficulty. We meet with many objectionable habits of a grave character; the possession of which, in kind or degree, may render the man more or less intolerable. The besetting sin with many, otherwise excellent grooms, is love of drink. With others, a bad temper and a brutal disposition. Others are the self-deluded victims of an overweening estimation of their own ability: such men are constantly dilating upon their extensive knowledge of horses, and of their capability as managers of them. In others, again, we observe a manifestation of cunning: they speak in a fawning tone, and apply assiduously the unctuous feather of flattery. Such fellows are generally knaves, and are ever upon the watch to serve their selfish purposes. To cheat their master, and misrepresent those who may oppose their nefarious tricks and designs, would seem indeed, to be the main purpose of their existence. They seek to rule the entire establishment. By artful means, and

villanous misrepresentations, they often supplant veterinary surgeon, saddler, coach builder, and corn dealer; and in lieu of them others are employed who will connive at their designs and practices. A servant of this kind, if living with a master ignorant of his ways, or unsuspicious of his true character, may at length attain the summit of his wishes, and for a time may reign supreme in his narrow sphere. If the actions of such a man be questioned, an artful tale is ready, the reverse of fact, so that, by a continuous course of unblushing effrontery, the master may in the end be led to believe that the advice and recommendations of his groom are based upon the purest motives of disinterested service, and are prompted by the desire that he, as his employer, may be rescued from the designs of unprincipled tradesmen; and he goes away inwardly rejoicing in possessing so acute and faithful a servant; when at the same time the scoundrel is robbing him at every turn, and aiding others to do the same.

Grooming.—To properly groom horses, and to keep them in order, certain tools are required, and certain conveniences and essentials indispensable. The principal *tools* which are necessary consist of—

Curry Comb	Whalebone Brushes	Scraper
Mane Comb	Hog's Hair Brushes	Shovel
Water Brush	Sand Can	Manure Basket
	Wooden Box, to contain Cow's Dung.	
Sponges	Stable Broom	Corn Salver
Buckets	Picker	Twitch
Fork	Dusters	

The *conveniences* comprise spacious and suitable cupboards, wooden pegs fixed in the inside walls, and hooks conveniently

placed to hang upon them bridles, halters, and other things of a similar character. The *essentials* are head collars, surcingles, woollen rugs, and woollen and linen bandages.

Such are the ordinary requisites of a stable. The desiderata are—firstly, to have a workman who *can* use them properly;—secondly, who *will* use them when needful;—and thirdly, keep them in their proper place when not wanted.

The duties of a groom are, principally, comprised in the following summary, viz.,—Feeding and grooming the horses; attention to the stable and its appendages; and a general and exact care of everything within or belonging to it. It is disagreeable to go into a stable, and see its interior in a state of disorder; and the place half buried with the accumulated dust and dirt of years. A stable should be kept clean, and neither tools nor articles of any kind should be allowed within it, but such as are to be found either in their proper place, or in constant use. The want of care and attention in matters relating to order and cleanliness are but too common in numbers of stables. The spare stall of the stable for instance—and few stables of any pretension are without one—may be occupied with the stumps of worn-out brooms, broken pieces of wood, quantities of hay ropes in a half-rotted state, old tubs, old bottle hampers, bones and fragments of broken food, whilst—to crown the whole—it may very likely stink most intolerably of dogs. The cupboard may be filled with rotten dusters; the windows with old blacking bottles and pieces of broken glass. The paint of the wood work in the higher parts of the stable will most likely be of a dull leaden colour; and the corners and borders of the ceiling rejoice in a number of antideluvian cobwebs. People who have their stables in a condition similar to what I have described, appear to retain useless lumber with a feeling akin to veneration, so studiously is this indescribable

collection of things preserved year after year, that one might suppose some important principle, in relation either to use or ornament, would be seriously compromised by its removal. Such debris, however, occupies room; and, besides excluding the pure air, affords a nidus for the generation of filth.

The floor of the stalls, and the paint of the wood work, ought to be regularly washed and cleansed. The walls and ceiling, ought occasionally to be white-washed, and the cobwebs swept away. The hay seeds which accumulate behind the hay racks, ought from time to time be removed. The mangers frequently scoured. The drains kept open. The glass of the windows maintained whole and clean, so as to exclude currents of air, and admit the light. The loose boxes ought always to be clean, and when not in use, ready for service. In short cleanliness and order within a stable are just as essential to the health and comfort of horses, as cleanliness and order within a dwelling are essential to the health and comfort of civilized beings.

STABLE REQUISITES.—Before describing the process of grooming, I may alludc to a few of the stable requisites enumerated in the list at page 49.

Cow Dung Box.—This is an article with which every stable should be provided. Cow's dung is the best substance to use as a stuffing to the feet of the horse. The process is only required to the fore feet. From the animal standing upon dry litter, travelling upon hard, dry roads, and exposure to the hot sun, the hoofs become hard and unyielding; in which state they are very liable to split, and lameness to ensue as a consequence. The best preventive to this drying and splitting, is to stuff the feet with a material containing both body and moisture—qualities which are found in the substance in question.

Many other substances have been tried, and various expedients resorted to; but cow's dung after all is the best available agent for the purpose. Pads made of felt are used in some establishments. These pads are soaked in water, and (while wet) are firmly packed to the foot, within the rim of the shoe. The plan, however, is not a good one. The wet from the pads is absorbed too quickly; and instead of the hoofs being made pliable and tough, the evaporation goes on with such rapidity, that the horn is left brittle, and in some respects worse than before. Moist felt pads are occasionally of service applied to the feet, when those organs are inflamed, and the application of water as a fomentation is necessary.

During the summer season, the fore feet of horses should be stuffed every second night; and during the winter season, twice a week. Prior to shoeing the animal, the feet should be stuffed at least two nights in succession.

Horse Clothing.—Horse clothing in part comprises woollen rugs, surcingle, and woollen bandages. In every full-appointed stable, however, suits of properly fitting clothing will be found in addition to the articles named. A complete suit of clothing for a horse, consists of hood, breast cloth, body cloth, or body sheet, pad for ditto, surcingle, and knee caps. Whether these several articles are procured or not, it is at least necessary to have for every horse, two large woollen rugs, one surcingle, one set of woollen bandages, and one set of linen bandages; while, during the winter season, a small woollen rug or two in addition will at times prove of signal service. In short, where a good groom is kept, plenty of horse clothing will always be carefully used, as well as held in readiness for extra occasions.

Linen Bandages.—Linen bandages are indispensable where one or more horses are kept. They are beneficial when soaked in cold water, and while wet, folded around the limbs. Wet

bandages applied to the extremities, excite a vigorous action within their vascular tissues. They aid in the removal of any incipient inflammation which may be excited within the joints and sheaths of the tendons. They also aid in the reduction of any over-excitement within the structures which may arise from undue exertion; also in the dispersion of swelling of the limbs. In short, they may be used with advantage in many ways, and every good groom will advocate their adoption.

The proper time to apply wet bandages will depend mainly upon the state of the limbs; upon the quantity of work done by the animal; and upon the season of the year. Where the limbs are fine, free from puffiness around the joints, the weather cool, and the labour of the horse easy, the frequent application of wet bandages is unnecessary. But if the limbs and feet are tender and puffy, from constant battering upon the roads, wet bandages may be applied three or four times a week during the summer, and twice a week during the winter season.

By the combined application of wet and dry bandages to the limbs, the effects of cold water may be varied to a remarkable extent. The skin may be forced into a state similar to that produced by the application of a blister. By their extreme and constant use, the tissues of the limb become inflamed, the hair peels away in large patches; and if the bandaging process be pushed still further, the skin will ulcerate, and suppurate abundantly. To produce effects similar to those detailed, it is only necessary to apply wet bandages repeatedly to the limbs, and over the wet bandages lightly to fold dry thick woollen ones. By repeated application is meant, that as soon as the reaction of the limb has subsided, and the wet of the linen bandage evaporated, a re-application of both bandages in the manner described be again, for some time, immediately resorted to. When the limbs are weakened, and the tendinous structures are

in as tate of chronic inflammation from continued over-exertion, it frequently proves of essential service to push the action of cold water to the extent represented.

Having thus enumerated the principal articles, and briefly described a few of the essentials to a well-ordered stable, I will next attempt to describe the duties of the groom to his horses.

DUTIES OF THE GROOM.—The duties of the groom will be the best understood, by simply detailing the entire process of grooming.

Beginning then with the groom in the morning, and terminating with the close of his labours at night, we will afterwards add a few comments upon sundry matters and things of a kindred nature, which in so doing can be treated of in a more consecutive and satisfactory manner. In the following outline, I shall suppose one man to have the management of two horses.

The time at which a groom enters the stable in the morning will depend upon circumstances, such as the amount of work performed by the horses the day previously, and the time at which they were left for the night. The general hour, however, is six o'clock, the year round. The principal duties of the day are these:—To give the horses water, corn, and hay; to adjust the straw, remove the manure, and sweep out the stalls; to dress the horses, and re-adjust their clothing; to clean and put in order the stable. At night the horses generally undergo a similar course of treatment; and the whole ought to be done in a methodical and careful manner. A groom without method is always busy; while all things around him are in confusion and disorder. If without method, he is either a very idle or a very stupid fellow. If idle, he will be dirty in his person. Grooms of this stamp are generally smokers, and are seldom without a short pipe in their mouth. Not unfrequently they

smoke when performing the duties of the stable, when washing the carriage, or cleaning the harness. They sometimes wash themselves; and then by the appearance of the dirt at the back of their countenance, any one would suppose the act had only been accomplished by forcing the neck of the fellow into a pillory. Such men are all sibilation and breeches.

The methodical man will in all probability proceed as follows:—He first presents water to his horses, and immediately afterwards gives them corn. He then removes the straw, and separates the wet portion from the dry. The wet is carried away along with the manure. The dung is next picked out of the hind feet. The stable is swept in a somewhat hasty manner, and a small portion of straw is then spread under the feet of the horses. He next carefully cleans the quarters of the horses with a wet water brush. One of the horses is then turned round in the stall; the head collar, as well as the nostrils, is sponged; and the head, neck, shoulders, breast, and fore limbs are by the agency of comb, wisp, brushes, and dusters, dressed thoroughly in every part. The horse is then turned back in the stall; the body rug is removed, and the body and hind parts are dressed as thoroughly, and in the same regular manner as the parts already described. The limbs are next hand-rubbed. The mane and tail are brushed and combed, and the horse is considered dressed. The next duty is to shake the clothing, to re-adjust it to the body, and fix it securely by means of the surcingle. The second horse undergoes a course precisely similar to the one described. The straw is straightened, and the stable made orderly and fit to meet the scrutiny of a connoisseur. He then gives each animal a portion of hay, when the duties of the morning may be considered as satisfactorily performed, and the worthy individual justly entitled to his breakfast.

The duties at night may vary to a greater extent. Let the

reader suppose the work of the day to have been heavy, the weather severe, and the horses to arrive at home drenched with rain, and hungry for food. They are housed as quickly as possible, and the work commences in earnest. They are first stripped of the harness, except the collars; or if they have been ridden, the bridles are taken off, and the girths merely slackened. First, the horses are to be scraped with a flexible scraper; this rapidly removes the loose water from the hair and skin. They are then clothed with hood, breast-cloth, and a couple of body rugs. The feet are next inspected, and if found free from stones, stumps of nails, or foreign bodies of every kind, they are washed out with tepid water, the legs being washed at the same time, and rapidly scraped; after which they are bandaged higher than the knees before, and the hocks behind. Each horse is then led into his stall, and allowed three or four quarts of water, or (what is better) about the same quantity of warm gruel. They are then fed with about half their usual allowance of corn. A little straw is spread beneath their feet; and they are left perhaps for an hour, at the end of which time they are allowed their fill of water or gruel, or both. More corn is given, the collars or the saddles are removed, and the clothing re-adjusted. If the limbs are dry (not otherwise) the bandages are taken away, and the legs hand-rubbed. The straw is carefully shaken down, and the beds are made comfortable. The racks are partly filled with hay; the feet are stopped with cow's dung; the lights put out; the doors made secure; and the horses are left for the night.

It must be understood, however, that the grooming processes thus described constitute the more simple features of the business. In large establishments, numberless requirements of a different nature are constantly demanding the care of those in attendance. Some horses are exceedingly difficult to manage;

they are difficult from viciousness of temper, or in the dietetic department. They may be greedy feeders, or delicate feeders; either of which cases occasionally requires in its management a great deal of judgment. Some horses upon becoming the least deranged in their stomach, are at once attacked with acute irritation of the skin, or acute grease; others with acute lymphites; and unless managed with skill—and that too of no common order,—so as to prevent the occurrence of one or more of the diseases in question, weeks may elapse ere they recover and become fit for efficient service. A skilful groom can manage such animals in a way which to the novice may appear perfectly simple. Such a man in any large horse-keeping establishment, or where horses of great value are kept, is simply invaluable. He is, in short, so to speak, the right-hand and indispensable factotum to such a place.

Before concluding the present section, it is necessary to advert to many other matters relating to the business of grooming; such as how to deal with a horse brought to the stable in a state of excessive perspiration; the temperature of the stable; the exercising of horses; their hours of feeding, when not at work; the advantage of immediately clothing the animal when wet from exposure to rain, or from being recently washed; the proper method of adjusting the body clothing upon the horse; and of fastening bandages to the limbs. These considerations, and others of similar character, it is of importance to the novice that he should have at hand, together with directions relating to them, which are at once suitable and available to his wants.

Treatment of the Horse when Perspiring.—As a general rule, when the horse is brought to the stable in a state of perspiration, it is desirable to walk him gently to and fro until the skin becomes dry; but this, from various reasons, may not always be

practicable. The hour at which the animal is brought in may be late, or the horse may be exhausted, or the weather may be severely cold, so that exposure in this way is out of the question, or any or all of these obstacles may exist in association; but under more favourable auspices, when the hour is early, the day warm, and the horse not exhausted, gentle exercise for a short time is to be recommended; after which the skin is to be thoroughly cleaned in the manner detailed. When gentle exercise is impracticable, the proper course to pursue is to have the body well scraped, and then clothed with rugs, and the limbs washed in tepid water and folded in bandages.

Temperature of the Stable.—I have before treated upon this question at page 28, and will simply add, that every stable, having any pretension to completeness, ought to possess a thermometer. The instrument should hang against the wall, so that it may be inspected at any time. The temperature of the stable should range from 60° to 64° Fahrenheit.

Exercise.—When horses have not a full complement of work, exercise in addition is necessary to keep them in health. They are generally exercised in the morning, before being dressed, (clothed according to the state of the weather,) and are kept out of doors from one to three hours at a time, according to circumstances. Morning is the best time, as the air is cool and bracing, and the sun not too powerful.

Hours of Feeding.—The hours of feeding in the majority of stables are pretty uniform. Six o'clock in the morning being the hour at which they are usually entered, and the horses fed for the first time. A second feed is given at twelve o'clock. A third at four; and the last for the day at seven in the evening. The corn is supplied out of what is called a corn salver, which is a shallow kind of basket, made to contain about four pounds' weight of oats.

Clothing the animal, in the Stable, when Wet.—The plan generally recommended as to horses brought into the stable thoroughly drenched with rain, or wet from the operation of washing, is to have them well rubbed with wisps of straw, and with wash leathers, until they are dry. This plan is, however, objectionable in many ways; for, without possessing much compensating good, it has many attendant evils. In the first place, if the circumstance of the animal being in this state has arisen from severe and prolonged labour, rubbing delays the period of his getting to rest; since to rub a wet horse dry, is a work of considerable time, and the animal under the circumstances is apt to become chilled, a condition of body which may induce pneumonia, inflammation of the bowels, or other kindred diseases. A better plan, therefore, is at once to scrape briskly the body and limbs, then to clothe the former, and bandage the latter. Nothing less than an entire suit of clothing, and a large woollen rug in addition, should under these special conditions be deemed sufficient. The value of the extra rug is this:—woollen clothing, when placed in immediate contact with wet, rapidly absorbs it; and if two rugs are placed one upon the other (the lowest one being in contact with the wet skin), all the wet will rise to the surface of the upper rug, so that after a sufficient time, and when the drying process is complete (which is much more readily effected by this than by the means ordinarily pursued), it is only necessary to remove the top rug, and the horse will be found dry, warm, and comforable. Nor will he have experienced the slightest irritation, but on the contrary an extra amount of warmth and comfort to the exhausted frame.

While upon the subject of clothing, it may prove of advantage to many if I describe the manner in which the body rug should be put upon the horse. A good criterion of an experienced groom, or amateur of horses, will be found in the neat

performance of this simple act. It should be done as follows: The rug is first gathered into folds, such folds being parallel to each other, and running across the fibre or nap of the sheet. The practical adept then advances towards the head of the horse, and on the left or near side. One half of the length of the folded rug is next thrown gently over the animal across the withers. The folds are then straightened out, partly by extending the rug upon the neck, and partly by sending the other half in a backward direction. It may now be adjusted equally to the sides of the horse, and then gently drawn towards the tail, until its proper place be attained. The small cloth pad next requires placing in its proper position upon the back. Then comes the surcingle, the long or buckle end of which should be turned back or inverted over its strap end. The padded centre is then set exactly over the cloth pad beneath, and the buckle end gently dropped down on the right side. It is then attached to the straps, buckled, and secured; and if, by this process the rug be disarranged at the sides, it is re-adjusted, and the operation is complete.

Bandages and Bandaging.—The benefits sought to be derived from the use of bandages, are that the limbs when wet may be dried; their warmth restored, when needful; and invigorated, when subject to permanent debility. These are the advantages which attend their use. The particulars to learn as regards their proper mode of application are simple, but still of importance. They should be fixed straight upon the limbs, or (in other words) so placed as their pressure may be equal and uniform; at the same time they should be but lightly though firmly attached; and the untied ends prevented by the manner of folding from getting loose. The evils connected with their improper application are,—irregular pressure upon the limbs; twisting and curling of the hair from the bandages being badly

folded; and swelling of the veins and tissues above the knees, from their being folded too tightly. Besides, when the bandage is folded too tightly around the limb, it causes the structures above the knee to swell, and thus induces a degree of numbness which, after the bandage is removed, may for a time occasion an impediment or irregularity in its motion. Such effects will not probably follow when the limbs are merely bandaged for two or three hours, neither are the minor evils at all times to be avoided. If circumstances necessitate that the limbs should be regularly bandaged when the animal is within the stable, it is not advisable in such cases to apply the wet bandages too frequently, as with too frequent use they become inert. Many horses, otherwise excellent animals, are affected with swelling of the extremities, which, as is well known, supervenes upon their standing a few hours. To some extent, bandaging is found to remedy this; and as the practice may be necessary, it is desirable that the process be understood, and properly done.

The *modus operandi* is as follows. First, damp lightly and uniformly the hair of the limb to be encased. Take the bandage (previously made into a compact roll) in your right hand. Let the horse stand upright upon his legs. Drop upon your knees near to the fore foot of the horse. Pass the loose end of the bandage to the outer side of the leg, and round by the inner side by means of the right hand, securing the loose end firmly to the limb with the left hand, then pass the bandage alternately from one hand to the other, encircling the limb. Let every fresh circle overlap about one third of the width of the previous one, keeping the bandage at the same time as straight and as even to the limb as possible, and in this manner repeat the process until complete. The proper place to fix the loose end to the limb, is a little below the knee, and on the outer side of the leg. In coming to the heel, a little manipula-

tion may be required to maintain the bandage evenly over the curves of the limb. To do this it may be necessary at these points to give the bandage a half turn or twist upon itself. Having reached the lower part of the pastern, the spare portion of the bandage, if any, must be worked back in the same manner, and the second loose end (which should be provided with ties to make it secure) tied upon the front of the limb, a little to its outer side.

These additional observations relating to the treatment of horses under particular circumstances or states, viz., when perspiring, exercise, hours of feeding, temperature of the stable, clothing the animal when wet, bandages, bandaging the limbs, and so forth, will, it is hoped prove advantageous to the reader, and worthy of his careful attention.

Racking Horses to the Manger.—In conclusion, I beg to recommend one rule which is of so much importance, that it ought to be enforced in every stable. It is this, *when horses are not required to work during the day, do not keep them racked to the manger from morning until night.* Allow their heads to be free, and shake down their beds. The practice of securing horses by a short chain to the rack after the grooming processes are complete, and the animals are not wanted, is cruel and senseless, and ought to be condemned by every humane person.

Washing the Legs.—Never wash the legs of horses when in the stable, unless they are scraped and bandaged immediaetly afterwards. If left to dry without bandages windgalls are produced, and on some occasions the limbs become swollen, stiff, and painful, and the animal suffers from a disease similar to rheumatism, or from grease and chronic swelling.

Section IV.

ON THE MANAGEMENT OF THE HUNTER.

HUNTING CONDITION.
PADDOCKS.
TIPS TO FEET.
PURGATIVES.
EXERCISE.
DELICATE FEEDERS.
DISEASE.
SORE BACKS.

Horses kept for the purpose of hunting are, in the majority of instances, animals of considerable value. I feel it incumbent upon me, therefore, to offer a few observations in relation to their efficient management, both as regards their special and general treatment. The exertions undergone, and the fatigue resulting from the pleasure of the chase, being of greater severity than what is undergone by horses employed in ordinary labour, a more than average knowledge is required in the management of the class to which this section is devoted. Experience has taught us, that certain modes of treatment are necessary to be pursued, in order to maintain the physical powers of the hunter in their highest condition and integrity, the peculiarities of which depend upon a variety of circumstances. The object to be attained by the trainer, being that particular state of the animal designated by sportsmen as "Hunting Condition; to produce which is a work requiring, on his part, time, considerable judgment, much labour, and untiring patience.

Prior to entering, however, upon a description of the several matters essential to the present section, it is proper to give the reader a statement of what I intend more particularly to treat upon. First, I propose to define the meaning of the common phrase "Hunting Condition." Secondly, to describe the common practices by which condition of the hunter is obtained. Thirdly, the treatment of the hunter after the severity of the chase, and also shew the *rationale* of the practices adopted. Fourthly, delicate feeders and their management. Fifthly, upon those diseases and accidents common to the hunter. Sixthly, upon the preparation of the animal for purgative medicine, the proper drug to use, and the after-treatment necessary to pursue. And lastly, I shall conclude with a few remarks upon the liability of the hunter to soreness of the back, and the mode of its prevention; together with such observations of a general character as may be necessary.

HUNTING CONDITION.—*By "Hunting Condition" is meant the existence of that state of the organism, in which the physical powers of the animal are ready for the exertion and reasonable maintenance of their highest capabilities of activity.*

Condition is not health: it is something super-added. A horse may be in excellent health, and yet, in the sense defined, totally out of condition; but he cannot long retain condition and at the same time remain out of health. Condition and health, although different, are nevertheless inseparable. The existence of the latter is absolutely necessary to enable the best of trainers to procure the former. To fully discuss this question, however, would lead us far beyond the scope of the present section. I shall, therefore, strictly confine myself to the task of giving an exposition of the practices adopted to obtain condition in those animals comprising the studs of our best hunting establishments.

Every intelligent groom knows from experience, the difficulties which attend the production of condition, and he also knows the desirableness of retaining the state when produced, no matter whether the horse in condition be much used or not.

Formerly it was the invariable practice to turn every hunter to grass, during the spring and summer months: observation, however, has proved this practice to be decidedly injurious. The organism of the hunter can be relaxed of its tension, and again brought to the state required by other methods equally simple, and in the end far more efficient to the living economy.

The system generally pursued will perhaps be the best understood, if I furnish the reader with an outline descriptive of the course usually followed in this department of equine management. Let the reader suppose the hunting season over, and every hunter belonging to any given establishment to be in perfect health. The duties necessary to be performed, and the results to be effected, are then, comparatively speaking, light and easy. In the first place, he must further suppose it desirable to slacken the tension of the organism of every animal comprising the stud, for a period of from two or three months; at the end of which time it becomes again necessary for every horse to attain condition similar to what existed prior to its relaxation. The principles held in view, and the methods pursued, differ but slightly, and they may be enumerated as follows:—

About the month of May (or earlier, weather permitting), every horse is turned at liberty within a paddock, and allowed to partake freely of green food. In addition to which, each horse will have at least two, and in many instances three, feeds of oats per diem, with hay *ad libitum*. The paddocks are well provided with dry comfortable sheds, plentifully supplied with straw or saw-dust. Into these sheds every animal is at liberty to go

during the day, and within which they are secured for the night. The oats are old, perfectly sweet, and of the best quality. The hay the same. The feet and legs of the horses are duly attended to, and such minor operations as rasping the hoofs, or nailing "Tips" upon them are regularly performed.* The above is the course pursued, until the latter end of July, or the beginning of August, when the stud is again housed; and then commences their preparation for the coming season. Every animal has given to him a dose of purgative medicine, which we will suppose to operate in a proper manner. In ten or twelve days after the first dose, a second is given, of the same strength; and in some fourteen or twenty days after the second dose, a third is administered: this completes the purging process. In addition to the purging, the horses are subjected to a regular course of exercise; the duration of which is varied according to circumstances, such as the age of the animal, its bodily state, strength, and so forth. As a general rule, however, the exercise is continued to each horse for two hours at a time. It consists of walking, and now and then slowly trotting the animal while he is heavily clothed. At the expiration of the time allotted, the horses are taken to the stable, thoroughly groomed, and afterwards covered with dry clothing of a lighter kind; they are then fed with oats, and a small portion of hay; afterwards bedded comfortably down, and left for several hours to rest.† Towards evening the exercise is repeated, and continued for about an hour. Such is their regular daily course of treatment; and as each animal becomes fitted for labour of a more severe

* "Tips" are shoes of a pecular kind, which are sometimes nailed upon the fore feet of horses while they are at grass, to protect the hoofs from being broken by coming in contact with the hard ground.

† Occasionally beans are given with the oats, but in many establishments they are not used.

kind, he is trotted with greater briskness in a morning, and the trotting is continued for a longer or shorter period according to circumstances. On some occasions, a fourth dose of purgative medicine is given; the necessity for which is determined by the peculiarities of the case.

In many districts suitable for the purpose, cub hunting is resorted to about the latter end of September, in lieu of the common walking and trotting exercise. The particular course specified above, consisting as it does of dieting, physicking, and exercising the hunter for the purpose of thoroughly freeing the organism of all the impurities which act, so to speak, by impeding the wheels of its machinery, cannot be hastily accomplished. The wind of the animal requires to be purified, vigour given to the muscles, and endurance to the vital energies. By the action of purgative medicine, the body is drained of its superabundant serum; by sweating and grooming a similar process is effected through the medium of the skin; while at the same time, greater freedom of action is given to the depurating and exhalent organs of the body, or in other words, relieving the pulmonary, vascular, and muscular systems of much that would otherwise prove detrimental to the animal if put to severe and long-continued labour. Condition, then, so far as we at present understand it, is only to be obtained by dieting, grooming, and exercising the animal, aided occasionally by the judicious administration of purgatives.

The plans which I have detailed, cannot perhaps be adhered to in every instance to the very letter. Horses, like human beings, differ much in constitution. Many of the best hunters are delicate feeders; others are the reverse; and others are naturally of a bad, gross habit of body; in short, there are horses of various pecularities of constitution, and they require to be known and clearly understood by those having their

management,—and, as experience proves, the mode of treatment must be varied to meet the requirements of each peculiar case. The great secret of success, is patience and steadiness,—using food of the best kind, and frequently giving it in small quantities. The exercise, at first, must be gentle and regular; no violence nor rashness, either with physic, food, or exercise; but easy sweats, small and frequent feeds, with long-continued grooming, will do more in a month or six weeks towards the result sought for, than any other mode with which I profess to be acquainted. In addition to what is already stated, the feet and legs of the animal will require constant attention.

Having now, I will suppose, prepared the hunter for the duties of the chase, we have in the next place, to speak of the best course to pursue, in order to keep him fully to the mark during the continuance of the hunting season; because upon this will depend, in a great measure, the continuance of his usefulness.

Treatment After the Chase.—The utmost care is necessary in the treatment of the hunter after a severe day's sport; particularly if the animal should possess a delicate constitution, or is a delicate feeder. The difficulties of the case are then very much increased; and here the services of a good groom will be found invaluable. A good groom to an exhausted hunter is, in fact, what a good nurse is to a wounded soldier.

The moment the animal enters the stable after the severities of the day, he should be taken in hand by a couple of men who are well versed with the duties of their business. One should gently unloose the girths, and remove the saddle and bridle, while the other should induce the animal to drink from two to three quarts of warm gruel.* After which he should be

* A mixture of boiled linseed gruel and oatmeal gruel, prepared separately in the first instance, and afterwards mixed in equal proportions.

thoroughly washed from head to foot with warm water and soap. The feet and legs during the process should be rapidly examined for bruises, sprains, thorns, and in short injuries of every kind. After washing, he should be scraped as dry as possible, then energetically rubbed for ten or fifteen minutes with dry wash leathers. He should then be clothed in *woollen* clothes—consisting of hood, breast cloth, and a couple of large woollen rugs over the body, closely secured to it by means of a surcingle. The limbs should also be wrapped with *woollen* bandages, from the feet to as high above the knees as possible. He should then be led into his stall, and more warm gruel allowed, after which he should be sparingly fed with boiled corn, and a little bran in combination, and left to himself for about two hours, or longer if necessary; but two hours will generally prove time sufficient wherein to dry the animal.

The damp upon the skin will ascend through the clothing, and lie upon the surface of the topmost rug, which remove. The bandages must also be removed, and each limb briskly hand-rubbed for five or ten minutes; then put on fresh bandages; give more warm gruel, or a little lukewarm water, also a mash of boiled corn and bran, and a little hay. Next make the animal a comfortable bed, and leave him alone for the night. The morning following, the light feeding should be repeated, the feet and limbs again carefully examined, and if found right, he should be taken out and gently exercised for about half an hour, and afterwards thoroughly groomed.

The quantity of food to be given should be slowly increased, as the vital powers return to their original vigour. Be cautious, however, and refrain from any approach towards glutting the animal.

Such is a general outline of the best known course to pursue with a hunter under ordinary circumstances; but unfortunately,

the work to be done is not always to be accomplished so readily. Horses of an excitable nature, or bad feeders, or of a delicate constitution, together with accidents, diseases, and other matters which may be denominated of an untoward character, are to be encountered; and to combat which with success, requires great experience and perseverance on the part of the groom, or indeed of any one having the care of such animals.

Rationale of the Foregoing Modes.—The modes of treatment whereby condition in the hunter are obtained, are submitted in a form which I trust will be plain and intelligible to the reader. A slight glimpse, however, into the "why and the wherefore" of a portion at least of the processes detailed, is what every one interested in these matters will naturally desire. Our remarks will, in the main, be limited to the practices of washing, clothing, and lightly feeding the hunter; proofs of the soundness of which are deducible from the laws governing the functions of the organism,—the study of which is a never-failing source of pleasure and instruction to those who may be interested in a knowledge of their operation.

After the exertions of the chase—supposing the runs to have been severe and long-continued—the hunter, as a natural consequence, will experience a state of general exhaustion. The vital power, so to speak, will be gone; and the aim of those directly interested in the welfare of the animal, should be directed to place him as speedily as possible in that state which science, in combination with experience, may devise as being the most favourable to his recovery.

The principal sources of the vital power, are the great nervous centres; and, these from the operation of the circumstances supposed, are in a state of complete exhaustion, the direct consequence of which is, depression of the powers and functions

of those organs, whose vital or functional activity is subordinate to the central sources in question. The muscles, in consequence of their tremendous and long-continued exertion;—the heart, in consequence of the extra labour it has been called upon to perform in supplying the muscles and nervous centres with pure blood;—the lungs, in consequence of having to receive and so rapidly to expose the blood currents to the atmosphere, are alike enfeebled, both from their exertions individually, and from the loss of central power also; while the digestive organs are enfeebled, more from the withdrawal of power to supply other parts, than as the result of over activity within themselves. In addition, we may remark, that not only does this state of general debility exist, but at the time the animal enters the stable, the vital power which remains is greatly disturbed. This is evident from the exited state of the pulse, the increased action of the lungs, and perhaps the undue amount of perspiration which may be going on from the general surface of the skin. The time, however, which will necessarily elapse during the processes of washing, clothing, and bandaging the animal, will generally prove sufficient to allow the system to fully return into a quieter state. In consequence of the general debility existing throughout the nervous and muscular systems, the less the horse is troubled, and the sooner he can be left alone, the better; hence, washing the animal under the circumstances named, is a practice to be highly commended, and one far preferable to grooming him in the ordinary way. No one, however hard he may work, can in a reasonable period wisp the skin dry if it be perspiring excessively. In addition to which, it is a source of irritation to every horse of quality; indeed its practice is a positive injury if performed upon a beast already half dead from over exertion. Wisping does not cleanse the skin so effectually, nor place the animal in a position to obtain rest,

with anything like the rapidity which washing does. Warm water is a powerful sedative, and if applied freely to the skin generally, its effects are known to be soothing and grateful in the extreme. Whoever applies it, however, should at the time work with a will; and after washing, and scraping the animal as dry as possible, not a moment should be lost in putting on the clothes, and folding bandages around the limbs. Reaction will then speedily commence, and total dryness of the hair almost as speedily follow.

Again, from the want of vital power within the digestive organs, arising, as previously stated, from the withdrawal of such power for the supply of other structures, it will be dangerous in the extreme to allow the animal to gorge his stomach with food. Delicate feeders are not to be feared in this respect; it is rarely they will partake of anything, the difficulty, in fact, is to induce that change within them, which leads to the requiring of food; but with horses which enter the stable ravenously hungry, the greatest caution on the part of those in attendance is required. No danger is to be apprehended from allowing the hunter a liberal portion of gruel, or from the administration of raw eggs mixed with tepid water. These are the proper kinds of food to allow, inasmuch as they afford nutrition to the system, without the digestive organs being previously called upon to digest it. The stomach and digestive organs, upon such occasions, are not only destitute of the power necessary to digest a liberal supply of food, but from circumstances in which they are placed, these organs must of necessity remain so until their vital energies are fully restored.

In closing our observations regarding the dietetic management of the hunter, I may observe, that the hay required for his use should be two years old, free from dust, and from what

is called being "mow-burnt." It should, in fact, be of the best quality which land can produce, or money purchase.

The oats should also be old, well fed, perfectly sweet, dry, and not kiln-dried.

The gruel should be made of the best and sweetest, newly ground oatmeal, and prepared in every respect with the greatest care. Do not imagine, because it is gruel for a horse, that therefore, any kind of sloppy preparation will answer the purpose. Properly to prepare gruel, is a matter which requires a degree of skill not possessed by every one. It should be made as though intended for an invalid. Let every one who may seek to become a groom, learn from a well-trained cook how to make gruel. If I required a groom, to superintend a stud of hunters, I scarcely know a better test whereby to judge of the fitness of an applicant, than setting him to make a bucket of gruel.

DELICATE FEEDERS.—It is impossible to lay down any positive rule as to how delicate feeders are to be treated. They require to be watched with the nicest care; choice morsels of food should be repeatedly presented to them; sometimes a carrot,—or a mouthful or two of dry corn,—or a little boiled corn,—sometimes a cake of rye or wheaten bread, will be eaten with great relish,—occasionally a little malt is preferred, and in many instances a mixture composed of equal parts of new milk, and oatmeal gruel, with the addition of a little salt, will be taken with avidity when every other kind of food is refused. Nux Vomica, and Muriatic Acid, will frequently prove of value in these cases; one or other of which may be given alone, or in alternation as may be required. Use the Nux Vomica, of the first dilution, in drachm doses, mixed with six ounces of water, and repeat the dose night and morning, for two or three days in succession; or if used in alternation with the acid,

the former in the morning, and the latter (eight or ten drops for a dose, in half a pint of cold water) every night, for a like period. With such horses, success will entirely depend upon management;—they require to be coaxed, and treated in fact more as we should treat children. They frequently manifest a strong aversion to having a fresh groom about them; they know their regular groom, and prefer him to any other person. Animals of this kind, are not unfrequently the best hunters in the whole of a large stud; and many of them appear to be conscious of this fact, and claim extra indulgence in consequence.

Disease.—Frequently after the severities of the day, incipient Catarrh will manifest itself; the symptoms of which are, pricking of the coat; frequent snorting or blowing the nose; and now and then a cough. It is desirable to correct this state at once, otherwise serious consequences may result. One of the best remedies for the purpose, is the Tincture of Camphor; two drachms of which may be mixed in five or six ounces of weak whiskey and water, and given with a horn. Another result to be guarded against, is that of Pulmonary Congestion. From the severe exertion, which at times the lungs are called upon to undergo, congestion of these organs is liable to supervene; in which case a powerful stimulant is indispensable. One of the best for this purpose, is the Aromatic Spirit of Ammonia, from six to eight drachms of which should be given at one dose in a pint of water. The dose can be repeated according to the urgency of the case. Other remedies may be required to complete the cure, which should be selected according to the nature of the case; but as this matter is fully treated upon in the section relating to Diseases of the Respiratory Organs, the attention of the reader is directed to it for further information.

A very common mode in which disease is prone to supervene, is that of "Chill." The breathing of the animal is rapid and loud, and attended with pricking of the coat and trembling of the limbs. The pulse at first is not much disturbed, but as reaction sets in, it beats with increased frequency. Tincture of Aconite will be of great value if administered in attacks of this kind. But as I shall fully treat upon this malady elsewhere, further observations upon it at present are unnecessary.*

INJURIES TO THE LIMBS.—Tincture of Arnica will generally be found the best remedy for outward application to the limbs when sprained, bruised, cut, or injured with thorns. Cold water bandages are also invaluable; but as their use is well understood in every properly regulated stable, it is not necessary to state more upon them. Every hunting establishment should have a supply of Arnica Lotion, which may be kept ready for use, and made as follows:—

Tincture of Arnica, 12 ounces.
Rectified Sprits of Wine, 24 ounces.
Cold Spring Water, 3 gallons.

Mix the whole together in a large earthenware pot, having a closely-fitting lid.

PREPARATION FOR PHYSIC.—The preparation for purgative medicine is a simple affair, and may be briefly described as follows:—Two days prior to the purgative being given, the animal should in part be fed with mashes of bran, three of which at least are necessary. Suppose, for example, it be determined to give the purgative on a Tuesday: the first mash for the purpose of preparation should be allowed upon the Monday morning, the second on the evening of the same day, and the

* See Article "Chill." Section VII.

third upon the Tuesday, about ten or eleven o'clock in the forenoon; after which the horse is to be kept entirely without water and food until six or seven o'clock in the evening, when the purgative is given. In half an hour after its administration, allow the horse as much chilled water as he will drink; then a good sized mash; after which he may be bedded down, and left for the night. The morning following, if the purging has not commenced, give at once more lukewarm water, and exercise the horse until it is fully established, which is rarely very long, —generally, I may say, within an hour from being taken out of the stable. The bowels being acted upon, place the amimal as speedily as possible within the stable, and let him remain there until the purging wholly subsides, which may be facilitated if the horse will drink frequently of chilled water or warm gruel. The food allowed during the action of the drug may be of the ordinary kind, but the corn given is better if previously boiled. The diet, in short, should consist of chilled water or gruel, or both; also boiled oats, bran, and hay; and under no circumstances of an ordinary character ought the animal to be again exercised, or worked, or taken out of the stable, until the purging ceases, which may be in one or two days after its commencement. It is dangerous to exert horses when under the influence of purgative medicine: to do so, may be productive of results of a fatal character.

The best purgative for horses is Barbadoes Aloes. The quantity necessary for a dose will depend upon circumstances; such as the susceptibility of the horse to the action of the drug, the genuineness of the aloes, and the time allowed to prepare the bowels for its action. Some horses are far more sensitive to the effects of aloes than others. Washy horses are usually of this nature: instances, however, occur where this kind of horse does not prove so sensitive to the action of pur-

gatives; and instances also occur of horses of a very robust constitution being exceedingly sensitive to their use. The only means, however, by which this fact is to be ascertained (as to the sensitiveness of a particular horse to the drug,) are by its administration. The ordinary quantity for a dose, is from four to six drachms, mixed with a little powdered gentian and palm oil, and given as a ball. The latter ingredient being merely used to make up an adherent mass convenient for ready use.

Sometimes the aloes fail to produce purgation. A full stomach is a preventative to this, also the non-preparation of the bowels with mashes; hence the reason why mashes of brau should be allowed to prepare the stomach and bowels for the drug, and why the animal should fast for some hours prior to the ball being given. When the drug fails to purge, it may excite the kidneys, and its effects pass off by causing greater abundance of urine; when this occurs, it is not wise to repeat the ball in less than a week from its first administration.

The usual practice with purgative medicine, is to give it in a morning. With this, as a general rule, I do not concur, for the following reasons. It is seldom or ever a purgative will act under twelve or fifteen hours after its administration; and in many cases it is apt to occasion violent disturbance to the bowels, which should be counteracted as soon as possible. It sometimes produces colic of a severe character; so that when the ball is given in a morning, the disease alluded to may supervene during the night, and in all probability at a time when the attendants are not at hand to afford the animal relief; but if the ball be given at night, and any disturbance of the kind named should arise the day following, it is more likely to be speedily discovered, and relief promptly afforded. As a general rule then, I should advise when a physic ball is given, to give it at night.

PREVENTION OF SORE BACKS.—When horses enter the stable hot and perspiring from being severely ridden, as a general rule it is not advisable to remove the saddle immediately. The admission of cold air to the skin, at a time when it may be in a state approaching that of being parboiled, is all but certain to cause a severe soreness of the back. An excellent mode to prevent this, is simply to slacken the girths, and allow the saddle to remain upon the horse for at least half an hour after he enters the stable. This cannot, however, on all occasions be done, particularly when the animal is to be washed in the manner I have detailed. The best substitute for the saddle upon such occasions, is an old saddle pannel, applied well warmed to the back, and buckled firmly down with a surcingle. The application of the pannel in the way suggested, and allowing it to remain for about half an hour afterwards, will generally be found to answer the end required.

I conclusion, I have merely to observe, that the medical treatment necessary to check superpurgation, and the surgical and medical treatment best to pursue with sore backs, the reader will find fully detailed, under their proper headings, in Part II. of the present volume.

I have also to observe, that Section VI. will relate to the hygienic treatment of the sick horse, in which the reader will find many observations of a special and general kind, all applicable to the subject treated upon in this section. The two sections, in fact, are intimately associated, inasmuch as they treat upon subjects of a like nature and importance.

Section V.

ON THE SHOEING OF HORSES, AND ON THE GENERAL TREATMENT OF THE FOOT.

STRUCTURE OF HOOF.
RATE OF GROWTH.
CAUSES OF LAMENESS.
PARING THE FEET.
FORM OF SHOE.
NUMBER OF NAILS.
LEATHER SOLES.
GUTTA PERCHA SOLES.
FORGING.
RULES FOR SHOEING.

The art of properly shoeing the horse, and the subject of the general treatment of his feet, are matters of considerable interest to the public. "No Foot, no Horse," is an old adage; and the more we see of horses, and experience the value of their service, the more obvious becomes the truth of this proverb.

Notwithstanding that the practice of horse-shoeing is of great antiquity, much ignorance still prevails as to the best mode of doing it, so as to secure the greatest amount of comfort to the foot and safety to the animal. No other department connected with the management of horses is of more supreme importance to the owner in a pecuniary point of view, than the one in question. Bad feeding, imperfect ventilation, and other matters of like character, may for a time be partially neglected with impunity; but if the animal be not properly shod, the feet are speedily crippled, and the horse, as a natural consequence, is rendered useless. It is not my intention, however, to enlarge upon this subject to any very considerable

extent; it having been already so ably treated upon by Mr. Miles, of Hixfield; and as an additional recommendation, the essay is issued in a form so cheap, that it is accessible to all.* He, however, has neglected to deal with a number of details, which in my opinion are of too much importance to be left unnoticed. I propose, therefore, to treat upon certain of these details, and in doing so, shall avail myself to some extent of the labours of the author named. I will also call attention to other associated subjects equally significant and important.

It is too much the practice with many authors who treat upon the subject of horses, to speak of shoeing as "a great but necessary evil." So far, however, from this being the case, it will be found to be a decided advantage. Unless the feet are adequately protected, the animal, if worked upon hard roads, will speedily become useless and unfit in every way, either for pleasure or business. Writers, therefore, who so dolorously lament the nesessity for fixing what they call "an unyielding bar of iron, to that highly flexible organ, the foot," may be severally suspected of ability to write a considerable amount of nonsense. The errors committed in shoeing, and the consequent evils to the animal to which these erroneous conclusions have reference, arise to a great extent, from the applying of this "unyielding bar of iron" in an improper manner, and upon incorrect rules of art, rather than from the thing itself.

In the present section, I shall treat in a plain manner upon a few matters relating to the exercise of this art, endeavouring to lay down certain rules with regard to its practice, and supply such sufficient reasons for their recognition as will, I trust, enable all who follow me with attention, to perceive their adaptation and value. They will be found serviceable to the amateur, in assisting the formation of his judgment; and to the

Horse Shoeing, by W. Miles. London: J. Murray, Albemarle-st., 1858.

farrier, by leading him to the more efficient performance of his responsible duties. To enable the reader the better to understand their full importance, I will, in the first place, describe the structure of the hoof of the horse, the mode of its development, and the rate of its growth.

The organization of the equine foot is one of the most perfect examples of Creative Wisdom which can be studied by the human mind. Its beauty of structure,—its completeness of parts,—and their adaptability to the intended uses and purposes of the organ, alike testify to the truth of this conclusion. It is surely one of the most wonderful combinations of living mechanism in the world: volumes might be written in illustration of this without in any way exhausting the interest of the subject.

In commencing our examination, we find that the bones which give support to the softer tissues constituting the limbs, are so placed as to afford the greatest amount of resistance to those violent shocks and concussions, to which every limb is necessarily subject. They are placed in mediate contact with each other, and are retained at varying angles by means of ligaments and tendons of the greatest tenacity and strength; while the more delicate and sensitive structures of the foot are enclosed and protected by a mass of horn, to which the cunning hand of a skilful shoeing smith should fix a properly formed piece of iron, thereby further protecting the tissues within, and more fully adapting the animal to its various uses and requirements. The present description will not extend beyond the horny covering of the foot, as any further observations would be unnecessary for our present purpose. The annexed engravings will illustrate the various parts of the hoof, their positions and importance, far more clearly than such ideas could be conveyed in words to the mind of the reader. Figure 8 represents a

hoof from which the internal structures have been separated. In examining it, the reader is supposed to look into the cavity of the organ.

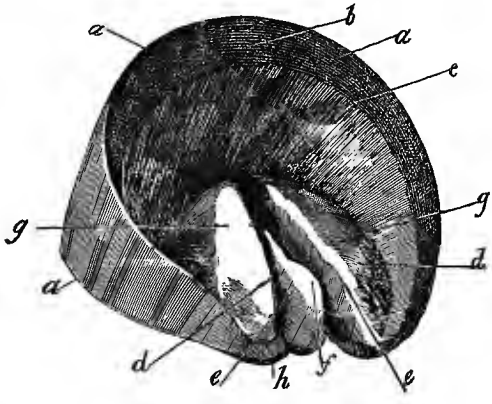


Fig. 8.

View of the Hoof as it appears when separated from its internal attachments.

aaa The Horny Crust.

b The Coronary Concavity studded with minute pores, which are the commencement of the Horn Tubes, of which the hoof is entirely composed.

c The Horny Plates, or Horny Laminæ of the hoof.

dd The Bars of the foot.

ee The Frog.

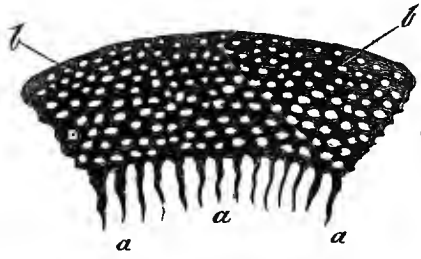
gg The inner surface of the Sole.

f The Cleft of the Frog.

The Hoof, or what is frequently called the Crust, is too well known to need any description of its form and position. If it be attentively viewed by an observer standing in front of the animal, he will perceive the organ to be more convex upon its *outer*, than upon its inner side. "Once upon a time," when Professor Coleman was supreme in the veterinary world, the form of the foot was described as being that of half a circle. All such descriptions, however, are superficial and erroneous; for if the organ was so formed, the animal during rapid motion

would be very liable to cut and lacerate the limbs upon their inner surfaces. The outer half of the hoof differs also from the inner in another respect: it contains a greater thickness of horn. The importance of knowing this, and other peculiarities of structure shortly to be described, will readily be perceived by the reader, should he peruse the articles on Sandcrack, False Quarter, and other diseases to which the horny substance is liable.

HORN TUBES.—Those ignorant of the structure of the hoof would naturally suppose it to be a solid mass of horn: an examination of it, however, with a common magnifying lens



Transverse Section of the Hoof magnified six diameters.

aaa The Horny Laminæ of the Hoof.

bb The Horn Tubes, of which the hoof is mainly composed.

Fig. 9.

will at once prove the incorrectness of this idea. If the reader will procure the hoof of a dead horse, and look carefully at the coronary concavity, (see Fig. 8, letter *b*,) he will notice an immense number of minute pores or openings. These are the commencement of the horn tubes, which are continued from the top to the bottom of the hoof; the hoof in fact is a series of minute cylinders or hollow tubes. These tubes exist in immense numbers, are placed side by side, and traverse the entire length, or rather depth of the horny mass. The animal,

* This may be readily done by macerating the limb for some time in water, when the hoof by a little force will easily separate from its connecting tissues, and its tubular structure will be exposed.

strange as the statement may appear, stands and travels upon thousands of cylinders, all arranged with extreme regularity and held together by a common glutinous medium, constituting in a great measure the peculiar pigment which gives colour to the hoof. Attached to the lower border (ground border) of the crust, is the sole which, like the hoof, consists also of cylinders. This may be readily demonstrated upon a living animal. If the reader will take the trouble to raise the foot of a horse, and free the sole from dirt by washing it, he may easily perceive by the aid of a common pocket magnifier the innumerable pores of which the sole is composed.*

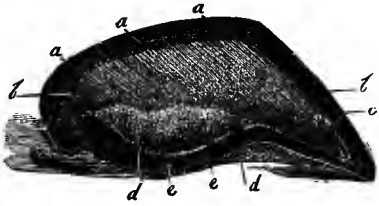


Fig. 10.

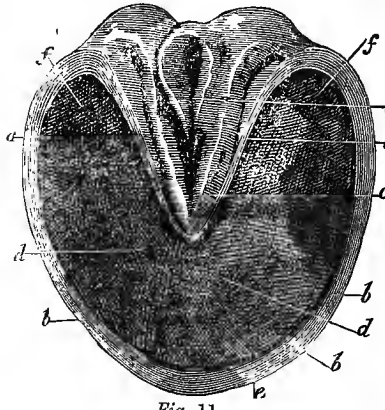
A Perpendicular Section of the Hoof of the Horse, shewing the Coronary Concavity, the Horny Laminæ, the Tubular Structure of the Sole, and the open mouths of the Horn Tubes or Pores of the Sole.

aaa The Coronary Concavity.
bb The Laminæ.
c The Crust.
dd The Horn Tubes of the inner surface of the Frog and Sole.
ee The Crust.

In illustration of this, Figure 10 affords a view of the hoof divided perpendicularly: the commencement of the horn tubes within the coronary concavity, together with the laminæ and the horn tubes of the sole, are all exactly delineated according to their natural positions.

* I strongly recommend every gentleman who may be fond of horses to procure a hoof.

SOLE OF FOOT.—From the crust we proceed to investigate the sole of the foot. Figure 11 shews the ground surface of a right fore foot: reference to the letters, and the annexed description will enable the reader to easily understand every part.



Ground surface of Hoof of right fore foot, shewing the Frog, the Bars, the Crust, and the Sole.

aa The Bars.
bbb The Crust, in close contact with
dd The Sole.
cc The Frog.
e The Toe.
ff Corners of the Heels: It is here where corns are formed.

Fig. 11.

The principal matters to be noticed, are—the shape of the sole, the varying thickness of the crust, and the perfect form of the frog and bars. Observe also the greater swell of the crust (*b*) on the *right*, than upon the left side. As the crust is the structure into which the nails are driven to fix on the shoe, the reader will perceive, by referring to the engraving, where the nails should be inserted. It will appear evident that the toe, and the outer quarter of the foot, are the parts naturally best adapted for such a purpose.

I have compared, by measurement, the fore feet of a great number of horses, with reference to the thickness of the crust; the difference of width between the right and left, or outer and inner halves of the feet; the angle of the crust; the depth of the crust at the toe, and at the heels; the width of the sole;

the length of the foot from the posterior part of the frog to the point of the toe; and the rate at which the crust is usually developed or grown. I have found the average measurement of fore feet of the best quality of horses, which range in height from fifteen hands two inches to sixteen hands high, to be as follows:—Depth of hoof from the coronet to the point of the toe, three and three quarter inches; ditto at the heels, from one and a half to nearly two inches; width across ground surface of sole at its broadest part, five inches; length from posterior or back part of the frog to the point of the toe, five inches; thickness of crust at the thickest parts, half an inch; width of outer half of ground surface of foot, from centre of frog, two inches and about nine-sixteenths; ditto of inner half from same point of frog, two inches and barely three-eighths. Angle of hoof at the toe, or at its deepest part, forty-five or forty-six degrees; *rate of growth of hoof five-sixteenths of an inch per month.*

All hoofs, however, are not of the excellent kind here described: the angle of some being much greater, and of others less. Many hoofs are very little more than a quarter of an inch in thickness at the thickest part. The ground surface of the best class is always concave or vaulted in form; others, of an inferior kind, are flat or nearly so; others again are convex, resembling the outer surface of an oyster shell. Convex feet are always objectionable, the animal possessing them being unfit for rapid locomotion. Many hoofs are more than two inches deep at the heels, while others are less than one inch.

The growth of feet also differs considerably. Some grow rapidly at the toe, and scarcely at all at the heels or quarters. Feet that are flat-soled, or oyster-formed at the sole, have this peculiarity of growth. In short, the endless variety of feet as to their form, size, strength, mode and rate of growth is very

surprising; at the same time their apparent deficiencies may not greatly affect their soundness and durability. In this condition they may remain, providing that they are not crippled by the ignorance or mismanagement of farriers.

The measurements given, and the facts above stated, form the basis from which I shall deduce the various conclusions and rules, which will follow hereafter, with reference to the shoeing of the horse, and the general treatment of the foot. However, before describing the necessary processes relating to the farrier's art, it is essential to enumerate those bad effects which so frequently attend its unskilful practice. These may be described under the general head of *lameness*, arising from the following causes:—

I.—From the shoe pressing too close to the sole of the foot.

II.—From the shoe pressing too close upon the heels. (Corns of the fore feet are mainly attributable to this cause.)

III.—From the paring and rasping of the feet to a greater extent than the horn is capable of being reproduced, during the period which elapses between one shoeing and another.

IV.—From pricks, stabs, and other injuries, which may be inflicted by the nails, if driven within, or too closely to the sensitive structures.

V.—From the shoe not properly fitting the fore feet, so as to allow of a sufficiency of "spring" at the quarters.

VI.—From the web of the shoe not affording sufficient cover to the sole of the foot.

VII.—From the shoes projecting too far beyond the heels.

VIII.—From the shoes being too heavy.

These are the principal of the direct causes which operate so injuriously to the fore feet. If gentlemen, owning horses, intend to use them with satisfaction to themselves, and comfort to their animals, it is incumbent upon them to learn what pertains to their welfare in shoeing, otherwise they will be victimised, and their horses subjected to treatment of a detrimental nature. It may be reasonably supposed, that the care and attention of a master will always be more efficient in the maintenance of order and regularity within the stable, than the inspection simply of a dependent. Owners of horses should be able to recognise when the animals comprising their stud are properly or improperly treated. Entrusting them entirely to the management of servants not under vigilant supervision, frequently results in gross neglect, the infliction of unnecessary pain to the objects of their charge, waste of food, and of the materials required in the stable, and probably direct pillage of the property of the owner.

As the methods necessary to be adopted for the efficient shoeing of the fore feet are different in many respects from those required for the hind feet, I shall treat upon the two separately.

PARING AND RASPING THE FORE FEET.—One of the most prolific causes of lameness of the fore feet arises from the too frequent and excessive use of the drawing knife and the rasp. The evils resulting from over paring and over rasping are incalculable. It is impossible to condemn too strongly the practices refered to if carried to an undue extent. To what

legitimate extent the practices in question may be carried, the reader may ascertain immediately. Common sense will tell any man who will reflect upon the matter, that if the feet are cut and rasped without judgment, and to a greater extent than the horn is grown during the intervals of shoeing, the animal will speedily become useless, from the want of protection to the sensitive structures within the hoof; yet this is regularly done by at least three-fourths of the farriers in the kingdom. Hoofs of the best class, and those which grow most vigorously, only produce horn at little more than five-sixteenths of an inch per month; while bad hoofs, or those which are thin, weak, and low at the heels and quarters, do not produce the material so rapidly even as this. All that the farrier should remove, are those loose cakes of horn attached to the sole, and this is especially necessary in order to bed the shoe carefully to the rim of the foot. A single cut with the drawing knife beyond this, is productive more or less of injury. The frog, unless diseased, should *never* be cut; the functions of this organ being of too important a character to be interfered with by ignorant or bungling attempts to improve upon its natural formation.

Immediately above the frog, are a number of structures which in combination form two most important articulations, viz., the Coffin and the Navicular Joints; and the principal use of the frog is to afford protection to the parts in question; consequently to cut away this organ, or any portion of its substance, is to remove the natural protection from these joints and structures, and thereby unnecessarily expose them to injury. We have no hesitation in saying that thousands of horses have been ruined by the practice alluded to. My advice is, LET THE FROG ALONE. With my own horses, I do not allow the smith to cut away even the ragged portions which occasionally hang

from the sides of this organ. The constant attrition which the frog undergoes when in contact with the road, is sufficient to control its size, without having recourse to a knife or a rasp in addition.

A horse, in regular work upon hard roads, requires a set of new shoes every four weeks, and the old set removing once between. I know numbers of horses, however, which require a set of new shoes every three weeks. Now, what with being newly shod, and having the shoes removed in addition, and from a smith cutting and rasping the feet so frequently (supposing all feet to grow at the rate of five-sixteenths of an inch in a month, or one inch in three months), it is evident, unless great care be exercised, that more horn may be removed than can be grown between the periods of shoeing. Smiths frequently boast of "opening the heels" with a view of causing the foot to expand, when at the time they are perhaps committing an irreparable mischief to the animal.

Every master farrier ought to know the usual rate of growth of the hoofs of every horse shod at his establishment, by which means he would understand the strength of every hoof, and its ordinary capability of resistance. He would also be able to calculate the exact amount of horn which he could safely cut or rasp away, without fear of injury to the foot.* It may here be added, that the greater the thickness of the hoof and the sole, the greater the security to the delicate structures within.

* The means of attaining this knowledge are simple. Procure a small three-edged file, and file a portion of the horn *across* its substance, a certain distance—say one inch—from the coronet. Do this at the front of the hoof and at the quarters; then with a pair of compasses measure the distance of the part filed from the junction of the hoof with the hair. Make a memorandum of the distance; and every time the animal is shod, compare with the first measurement. By this means the rate of growth of the hoof will be readily known.

The injuries which result from the excessive use of the rasp are of a different and somewhat less dangerous character than those inflicted with the drawing knife. The hoof contains within its horny substance a certain amount of *latent moisture.* It is this latent moisture which keeps the organ strong and tough; and any agency productive of inordinate evaporation from its surface (a small amount is constantly exhaling), tends naturally to render it dry, unyielding, and brittle. To prevent this, nature has so constituted the foot, that it secretes a peculiar substance which is spread in abundance over the external surface of the crust. This substance consists principally of silex or flint; it is in fact a coating of flint, which dries and hardens, thus preventing undue evaporation as well as protecting the hoof from the heat of the sun.* Man, however, so clever and so wise withal, must *improve* upon Nature and beautify her works, and his notion of doing this upon the foot of the horse, is by paring and rasping the organ, which for the time being perverts her ends and intentions. The rasping which a hoof ought to undergo is slight in comparison with that which usually takes place. It should be rasped immediately below where the nails issue from the horn, and at the border of the foot resting upon the shoe. Rasping immediately below where the nails are clenched, allows of their being more securely fixed. It is also necessary to the border contiguous to the shoe, and to the toe to shorten it. In cases also where the horn grows more rapidly at the toe than at the heels and quarters, shortening the former by rasping will materially aid in deepening the latter.

* We observe a similar arrangement on the stem of the sugar cane. By bending a piece of cane, the experimenter may notice upon the bent surface, a number of loosened particles of metallic looking matter. This is the siliceous covering of the cane. Similar deposits may be observed upon the outer surface of straw, and most of the dried grasses.

In concluding under this head, I may repeat, that the amount of paring and rasping must be regulated by the growth of the horny substance; but under no conditions (save those of disease) are the frog or the bars to be pared, nor is the surface of the hoof to be rasped, beyond the extent stated above.

SHOE TO BE MADE CONCAVE UPON THE FOOT SURFACE.—The importance of the shoe being dished, or made concave upon its foot surface, will be obvious to the reader if he reflects upon the facts already detailed respecting the organization of the hoof. It has been explained that the sole of a properly formed foot is concave or vaulted; consequently the weight of the animal has to be entirely supported by the crust; and to this crust the shoe must necessarily be attached. That part of the hoof which naturally receives and supports the weight of the animal, should be that to which the protecting medium ought to be secured.

Figure 12, *shewing the proper form of the shoe, or as it should be before being nailed to the hoof.*

aaaa The bearing surface of the shoe.

bbb The concave or dished part, made so as to prevent the shoe from pressing upon the sole of the foot.

Fig. 12.

The proper form of the foot surface of a shoe is shewn in Figure 12; *aa*, called the bearing surface, is the part made level to receive the crust; *bb* is the dished or concave part. As a rule for the guidance of farriers, a fore foot shoe *ought to be*

just so much dished as to allow, when nailed to the crust, of a picker being freely passed all around between it and the sole. More than ordinary care should be taken to prevent the shoe from pressing upon the quarters and corners of the heels. I mention the quarters and the heels more particularly, because it is at these points that undue pressure is to be dreaded, and is so frequently the cause of lameness. It is also here, that corns have their seat (see *ff*, Figure 11, page 85), and every horseman well knows the danger which attends their presence. A corn is a common cause of foot lameness, and occasionally of the animal falling down and injuring its knees.

The flatter the sole of the foot, the more the shoe will require to be dished, and the greater the care necessary to be exercised by the farrier in fitting it. Horses having flat-soled feet, if shod by an ignorant or careless smith, will generally be found to have corns within the heels, and bruises upon the soles of the feet.

THE SHOE TO BE ROUNDED AT THE TOE.—The *rationale* of this, as a rule, will appear evident to any one, who will take the trouble to examine the worn-out shoes of horses; he will find that the majority of them will be much worn at the toe. The animal for several days after having been newly shod, without the toe being rounded, will generally trip more than when it is fashioned as directed,—a strong proof that the rule is worthy of being practised. A fore foot shoe ought to be rounded at the toe, and the rounded part properly hardened at the time.

THE BEARING OF THE SHOE TO BE UNIFORM.—This in most cases is necessary. In some instances, however, it will be expedient to give the shoe what is called "a spring" at the quarters; that is, the shoe, as it approaches the heels of the foot, is to be very slightly bent from the crust. Many horses having excellent fore feet, could not travel with safety unless

the shoes were so prepared. The way in which the farrier is to proceed with the shoe is as follows. It is first to be fitted uniformly to the crust; it is then to be placed upon the anvil with the foot surface downwards, and gently struck across the middle, just to give the necessary bend to the iron. The slight inflexion thus given does not in the least alter the even bearing of the crust: it simply allows of greater freedom of motion to the foot.

Degree of Cover necessary to the Fore Feet.—The extent of cover, or protection which the fore feet may require from the shoes, will depend upon the size of the animal, as well as upon the size and peculiarities of the feet. Large sized horses, and those having large feet, will naturally require a heavier shoe, and one possessing greater breadth upon its ground surface, than small horses having proportionately small feet. Thin flat-soled feet require more cover of shoe than those having concave, strong, well formed soles. The former are more liable to suffer from irregularities of the road, so that a greater breadth of shoe is necessary to afford protection to the sole. This is a question, however, so easy at all times to determine, that it is unnecessary to dwell further upon it.

Fit of the Shoe.—The shoe ought to fit the foot. This is so obvious, that it may almost be considered a self-evident truism; but however true abstractedly, it is very far from being trite in practice. Thousands of feet are made to fit the shoes, rather than the shoes made to fit the feet, and thousands of horses are rendered lame in consequence. A careful attention, however, to the previous remarks with respect to the paring and rasping of feet, will fully enable the reader to judge as to whether a farrier, when shoeing a horse, is fitting the shoe to the feet, or the feet to the shoes.

Mr. Miles recommends that the outer rim of the shoe should exactly correspond to the rim of the crust; and also that the web of the shoe *be of uniform width.* He says, "the edge of the shoe must be made to correspond with the edge of the hoof all round, from heel to heel; and to do this effectually, and keep the web of the shoe as wide at the heels as it is at the toe, the heels must be brought in until they very nearly touch the frog. I would not have them bear on the frog, but I would rather see them touch it than be able to lay my finger between it and the shoe.

"There are many advantages attending the bringing in of the heels, and not a single disadvantage to set against them. In the first place, it removes all the points and projections by which stiff ground is enabled to pull off the shoe; in the next place, it affords a good, firm, flat surface for the heels of the hoof to rest upon, and by bringing the sides of the shoe nearer together, the navicular joint (which lies in the hoof above the frog and about an inch from its point) is saved from many an unlucky jar from stones on the road, by the shoe receiving it instead of the frog. The shoe must not only fit the edge of the crust, but the whole of the crust must have an even bearing on the shoe; and this can only be effected by making the shoe hot enough to scorch the horn, and applying it to the foot. The quantity of horn to be thus destroyed, when the foot and shoe have both been made as level as the smith can make them, is very inconsiderable, and the heat so applied can do no harm. I would not have the shoe *burnt* into its place on the foot without previous preparation, as is very often done to save a little trouble, but I would have the hot shoe so applied as to insure a close fit all around. A thin, weak hoof will not bear as much heat, without inconvenience to the horse, as a strong one; but as a close fit is of even more importance to a weak

foot, than to a strong one, it is essential that the shoe be applied to it hot enough to scorch the projecting portions of horn, in order that they may be seen, and removed. When the shoe has been carefully fitted to the foot it must be cooled and back-holed; that is, the nail holes must be opened on the foot surface of the shoe; and in doing this care should be taken to break down the *outer* edge of all the holes, so that the nail may pass straight through the shoe without any inclination inwards, and the openings should be made large and free to prevent the shank of the nail becoming tied in the hole (iron-bound) before the head has been driven fairly home." This quotation so completely exhausts this division of the subject, that I have nothing further to add beyond my willingness to adopt as my own the views put forth, not only with regard to the above, but also as to the

NUMBER OF NAILS NECESSARY TO SECURE THE SHOE TO THE FOOT.—From time immemorial it has been considered necessary to use eight nails to fix a shoe securely to the foot; but this practice, like many others whose chief authority is their antiquity, is found by experience to be generally useless and unnecessary. Five is the number which Mr. Miles considers amply sufficient to retain each shoe firmly in its place, and that they should be distributed as follows, viz., three nails to the outer quarter, and two to the inner. "As a general rule the first nail on the outside should be placed an inch and a half from the centre of the toe, the second in the middle of the quarter, and the third just behind the quarter; and on the inside, the first nail should be rather more than an inch from the centre of the toe, and the second about three quarters of an inch behind it. By this arrangement the whole of the inner quarter and heel are left unfettered and free to expand, and any undue pressure on the sensitive parts of the foot, from the descent of the bones into the hoof, is avoided."

The annexed engraving, also taken from Mr. Miles's work, will perhaps shew the matter still more clearly.

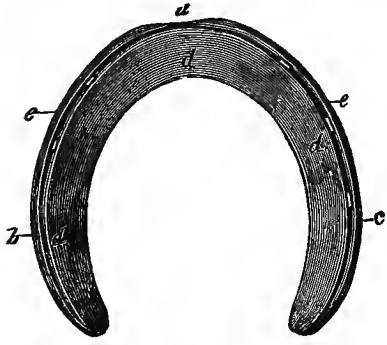


Figure 13 *shews the foot surface of a left fore foot shoe, giving the position of the nail holes, as recommended by Mr. Miles.*

a The Toe.
ec The Outside Quarter and Nail Holes.
eb The Inside Quarter, shewing the Nail Holes.
ddd The Web of the shoe.

Fig. 13.

The common practice is to fix a fore foot shoe with eight nails; this number is more than necessary for hack and harness horses. I have experimented a good deal in this matter, and can with confidence state that Mr. Miles' recommendation, so far as it relates to saddle and harness horses, is good. Five nails in their case are sufficient; but should the reader be sceptical upon the matter, he may readily test it for himself, without either risk or expense, by using, on the first opportunity, the five nails instead of eight.

I do not recommend five nails on the same ground merely as Mr. Miles, viz., because "by this arrangement the whole of the inner quarter and heel are left unfettered and free to expand;" since the expansion of the hoof is, with many, a question of doubt. Numbers of veterinary surgeons deny it altogether; others, however, as strenuously affirm it. In my opinion, both are right, and both are wrong. I have found the feet of young horses and of those which have not been severely taxed with labour, to expand; while the feet of aged horses,

and of those for a long time engaged in severe labour, have not had this characteristic. At least, after numbers of experiments carefully conducted, I have hitherto failed to satisfy myself that the rule is without exception; so that with feet of the latter class, a nail or two in addition to the number stated will not be detrimental to the physical welfare of the organ operated upon.

Leather and Gutta Percha Soles to Feet.—Numbers of fore feet require more protection than is afforded by the shoes. Feet having flat or "pumiced" soles, low heels, and weak crusts, are of this character; in which cases it is usual to employ leather for the purpose of affording additional protection; and if carefully fitted to the soles, they will be found of essential service; but much care is required to adjust them comfortably to the feet, besides the additional trouble of applying tar and tow to the soles, to prevent the horn from becoming dry and hard. In those cases, however, where further protection simply is needed, I recommend the use of gutta percha in preference to leather. It can be made to accurately fit the sole; it does not require the additional aid of tar and tow to the foot; and, if necessary, it can be removed at pleasure without having to remove the shoes as well. As the application of gutta percha to the feet is an operation requiring skill and tact on the part of the operator, I shall describe the process for the benefit of those who may not understand it, but who, nevertheless, may desire to experiment upon its efficacy.

First, prepare the foot, and fit the shoe in readiness to nail to the crust,—taking care to have the foot surface of the shoe properly dished. Next, procure a piece of gutta percha, about three-sixteenths of an inch in thickness, place the *foot surface* of the shoe upon it, and with a sharp pointed instrument mark the gutta percha through the nail holes, to indicate the size of

sole required; then cut it accordingly. The artificial sole will not require to be the size of the shoe: if it extends to the inner border of the bearing surface of the shoe (see letters *a a* Fig. 12, page 92), it will be sufficient. Having determined the size of the sole, nail the shoe to the foot; then (to do what is necessary) place the gutta percha in hot water, and there allow it to remain until it becomes soft; then lift it gently out; and while an assistant firmly holds the foot, place the softened substance in a proper position upon the sole, and with the fingers and the aid of a thin flat piece of lancewood (cut at one end to the shape of a wedge), press the gutta percha under the dished part of the shoe, and also closely to the sole and frog upon every part of the foot. The operation then is complete.

If the above operation be neatly and expeditiously performed, the artificial sole will scarcely be observed when the animal is in motion. Should it be desirable to remove the sole, it can be again readily softened with hot water, and taken away without disturbing the shoes. A gutta percha sole not only protects the foot to which it may be applied, but (by preventing evaporation from the ground surface of the organ—which it does), it precludes the horn from becoming too hard and brittle.

SHOEING THE HIND FEET.—From the fore feet, we proceed to the consideration of those matters which pertain to the shoeing of the hind feet. These may be comprised under the three following heads:—

I.—Raising the heels of the shoes.

II.—The prevention of cutting.

III.—The prevention of forging or clicking, or what in Yorkshire is designated "hammering and pincering."

These several matters I shall briefly consider in the order stated; and then conclude the present section with such remarks and observations with respect to the general treatment of the foot as the subject may require.

RAISING THE HEELS.—The advantages which attend the use of calkens to the heels of the hind feet shoes will become obvious to the reader, if he reflects upon the difference of form and structure between the fore and hind limbs; and also upon the different duties for which they are constituted and adapted.

The limbs of a horse are not only columns for support, but they also a series of levers and fulcrums. The bones of the limbs are so placed as to present to the eye of an observer, a succession of beautiful and ever-varying angles and curves. The bones of the fore limbs are for the most part placed at angles of an obtuse character; while those of the hind limbs are acute, or more abrupt in their general appearance. The fore limbs during the act of locomotion are engaged in receiving, supporting, and carrying forward the weight which the hind limbs are engaged in *lifting and propelling onward;* and it is this difference in their duties that constitutes the necessity for the component parts of each being differently arranged. The levers are the muscles and the tendons; the fulcrums are the bones, both as they exist in their single state, or arranged as they are to form joints. Amongst the principal fulcrums or centres of motion belonging to the hind limbs, are the hock and the fetlock joints; and experience has proved that these joints, and the levers in connection with them, are the parts most liable to injury from over exertion: the common consequences of which (particularly if aided by predisposition arising from imperfection of structure and bad formation of the joints) are sprains, curbs, and spavins,—consequences which to a certain extent are preventable, or where in existence, can

be palliated by the use of calkens. It may be urged in opposition to this, that nature does not provide any such protection to the joints, tendons, and muscles of the hind limbs of the horse, when in his wild or natural state, to which I can only reply, that the cases are totally different. The horse, when wild, has simply to take care of himself; he has not to carry a man weighing fourteen stones across a stiff clayey country at a rasping pace; neither is he ever yoked to a heavy van, loaded with perhaps from three to four tons of iron; nor to a vehicle, and made to trot fourteen, sixteen, and even eighteen miles an hour upon hard macadamized roads. All these, and many other performances of a like nature, the civilized horse, at the bidding of *civilized* [?] man, is made to perform.

It is amusing to hear what these sticklers for nature have to advance in matters of this kind. Certainly nature does not employ a farrier for the especial benefit of the animal when untrammelled, and breathing the pure air of his native wilderness; neither does she provide a fashionable boot maker for the Australian savage. It is easy to talk about nature, but it is another matter to draw rational conclusions from her teachings. Wild horses, for aught we positively know to the contrary, may suffer as much from sprains, spavins, and curbs, as horses do that are domesticated.

The value of calkens then to the shoes of the hind feet consists in raising the heels from the ground, and that too at a time when the animal may be called upon to exert its physical powers to the utmost limit; in which case, the levers of the limbs, so far as it is possible, will be prevented from being stretched to an extent, which otherwise might prove severely injurious to the living structures.

The Prevention of Cutting.—Cutting the hind fetlocks is a common practice with numbers of horses, if made to travel

quickly, and the speed be long continued. It arises from a number of causes, two or more of which may act in association. It may arise from weakness. Horses having been recently affected with disease of a severe character, if put to work before the enfeebled frame has fully recovered its pristine vigour, are extremely liable to strike one limb against the other, and cut themselves in consequence. Cutting may also arise from bad conformation of the limbs. "Cow-hocked" horses are prone to this evil. It may also arise,—as it very frequently does,—from bad shoeing, and bad management of the feet.

"Various devices," says Mr. Miles, "have been at different times suggested as a remedy for the evil; but as each horse has his own mode of doing it, much difficulty is often experienced in hitting upon the right one. I have frequently solved the difficulty by placing a boot, or a piece of cloth covered with damp pipe clay, over the injured part, and then causing the horse to be trotted along the road, and he generally returns with some of the pipe clay adhering to the offending portion of the opposite foot or shoe, as the case may be, pointing out pretty clearly the part to be lessened or removed. The adoption of this simple plan has saved many a horse from months of torture, arising from ill-contrived shoes and misapplied remedies."

The plan, as detailed above, for detecting the part inflicting the wound upon the opposite limb, is as simple and as direct as it can well be; but if the fault arises from general debility of the system, or from bad conformation of the limbs, attention to shoeing may to some extent palliate the evil in both instances. In the former case, the cutting will in all probability disappear as the animal gains strength; while in the latter instances, a permanent cure may be out of the question. I know horses which cut both with the fore and hind feet, and which up to

this period, have baffled the efforts of every shoeing smith who has tried to eradicate the evil. With animals of this kind it is useless to cut and rasp away the inside quarters of the feet; such a process is not only useless, but cruel and dangerous.

The best form of shoe to prevent cutting of the hind feet, is one made similar to what is shewn in the annexed engraving. Shoes of this kind are to be attached to the feet; and should the evil remain to some extent afterwards, the limbs should be encased with an india rubber boot.*

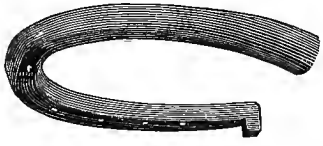


Fig 14.
Form of Shoe for the Hind Feet to prevent Cutting.

The *outside* heel of this shoe is provided with a calken of the ordinary kind;—while the inside quarter is not only bevelled along its whole length, but the whole of the quarter is also *rounded like the outer surface of the index finger*. Sometimes it is necessary, in nailing on the shoe, to fix the nails to the outside quarter and the toe only. The necessity for this, should be determined by the peculiarities of the case. Should nails, however, be fixed to the inside quarter, the sharp edges in connection with their heads, and the fullering or countersinking of the shoe, can be effectually removed with the rasp.

FORGING AND ITS PREVENTION.—Forging, clicking, or "hammering and pincering" as it is termed in Yorkshire, is a most disagreeable habit. The practice is more common with young than with old horses. Young horses possessing great freedom of action, will generally click for some time after being broken, especially if ridden or driven carelessly.

* The india rubber boot is an article which can be procured from saddlers.

"A horse forges by striking the *outer* rim of each side of the shoe, just where it turns backward (near the toe), against the *inner* rim of the fore shoe, just behind the quarters; therefore, the broader the toe of the hind shoe is made by the squaring and the clips, the more likely the horse is to strike it against the fore shoe. It happens in this way: the horse fails to carry his fore foot forward quickly enough to get it out of the way of the hind feet, and the toe of the hind shoe is thrust into the opening of the still held up fore shoe, and the outer edge of the hind shoe strikes against the inner rim of the fore shoe and produces the sound. I have cured several horses of forging by merely causing the corners of the artificially squared toe to be removed and the toe restored to its natural form."*

The above explanation, so far as it relates to the production of the peculiar sound attending the act of forging is correct; the remedy, however, which Mr. Miles proposes for its removal may in some instances destroy the striking of the rim of one shoe against the rim of the other, but I strongly suspect, that the *real* evil is not remedied in the least. Instead of the inner rim of the fore foot shoe being struck, I believe the frog of the foot will be struck; and this not being attended with any sound, the experimenter may be led to suppose that the evil is removed when it is not, unless indeed it may be so far as it relates to the mere noise of iron striking against iron; but the *real* evil caused by the striking of the feet against each other will remain just as it was before.

The plan usually adopted to remove this evil, and one which I consider preferable to what is suggested for the purpose by Mr. Miles, is to place the hind foot shoe well back upon the foot; or in other words, instead of the shoe extending to the

* W. Miles on Horse Shoeing.

point of the toe, it is set back so as to allow the crust forming the toe to hang over the toe of the shoe. This, as in the former case, completely destroys the sound attendant upon the act of iron striking iron; while the real evil of striking is modified: thus, instead of the toe striking the frog, it strikes against the shoe merely, which is not so likely to produce mischief as in the former instance. The latter plan also allows of the toe of the shoe being to some extent left square; and this to fast running harness horses, will prove of great advantage in allowing the animal a broader and firmer grip upon the ground. The best way, therefore, to destroy the click, is to adopt the plan which is usually had recourse to, and which is described above; while the best way to destroy the striking of one foot against the other, is to keep the horse well in hand, or to cause him in fact, to take quicker steps, by running him well up to the bit of the bridle.

THE HIND FEET TO BE SHOD WITH LEATHERS.—It will be best if the hind feet of horses which are much confined to the stable be always shod with leathers. The advantage of this I will explain in a few words. Horses, when in the stable, stand in their dung, and this in time is productive of a bad effect upon the feet, but more especially upon the frogs. In this manner running thrushes and canker are frequently produced, diseases which are very injurious to the feet, and very difficult to cure.

THE HEELS TO BE LEVEL IN THEIR BEARING.—To mention this may to numbers appear superfluous: it is a common matter, however, to observe horses shod with the outside calkin or heel much higher than the inner heel; thus the limb is thrown into an unnatural position. Such a state of things is unpardonable; and the farrier who allows it is either a very

careless or a very ignorant workman. The heels of a hind shoe should, in every instance, be of equal depth or thickness, and the bearing uniform.

In conclusion, we may sum the whole of our observations with respect to properly shoeing the horse into a series of principles or rules, which may be arranged as follows:—

I.—The farrier should bear in mind that the best formed feet, and the most energetic in their growth, only produce hoof at the rate of five-sixteenths of an inch per month; and consequently he should at all times be extremely sparing in the use of the drawing knife.

II.—The frogs of the feet should not be cut, nor in any way reduced with the knife, unless disease of the organ should render such a proceeding necessary.

III.—The fore feet shoes should be secured each with five nails. The hoofs should not be rasped, except in the manner and to the extent described at page 89.

IV.—The fore feet shoes should be well dished; so well, in fact, as to allow of a picker being freely passed between the shoe and the foot along the entire circuit of the iron.

V.—The web of the shoe should be wide, so as to afford ample cover to the foot.

VI.—The bearing of the foot upon the shoe should be uniform.

VII.—Fore feet which are weak, thin, tender, and low at the heels, should be provided, where practicable, with shoes

which become gradually thicker from the toe to the heels; and the soles of the feet to be protected with soles of gutta percha, made secure to the feet by the process detailed at pages 98 and 99.

VIII.—The hind feet shoes should be provided with calkins to the *outer* heels: the inner heels and quarters should be what are called wedge-formed, and rounded.

IX.—To prevent cutting of the hind feet, the inner quarters of the hind shoes to be bevelled and rounded, and the shoes secured by nails which extend only from the outer quarters to the toes of the feet.

X.—To prevent forging, the hind shoes should be placed well back upon the feet, so as to allow the toes of the hoofs to hang over the toes of the shoes.

XI.—The heels of the hind feet shoes should be of equal depth or thickness, so as to support the limbs uniformly.

Section VI.

ON THE HYGIENIC TREATMENT OF THE SICK HORSE.

ARTICLES OF DIET.
BARLEY WATER.
RICE WATER.
BOILED RICE.
HAY TEA.
GRUEL.
MILK.
MALT.
GREEN FOOD.
HOUSING SICK HORSES.
LOOSE BOXES.
CLOTHING SICK HORSES.

One of the most important matters in the treatment of animals when diseased, especially during the period of convalescence or recovery, is their hygienic or dietetic management. It is a species of knowledge indispensable to veterinary surgeons; and yet from the false views which are generally entertained, not only by the medical profession at large, but also by the majority of all classes, with regard to the power of the vital force to rectify the organism when diseased, hygienic treatment (in relation to the state in question) has not received a tithe of that attention which it merits. So long, indeed, as it continues an article of belief *that physic cures disease*, so long will those who practise the healing art refrain from the study of hygiene, and of the healing power of the vital force;—both of which are to be considered as holding an inseparable relation to each other.

The only power which cures disease *is the vital power:* and the utmost that medicine can do—and I at once admit that it is

a great deal—is, by its action, to so influence the curative power, or, in other words, so direct or control it, as to place the part diseased under the most favourable conditions conducive to recovery. Until veterinary surgeons acquire a correct knowledge of the real curative power in disease, and treat their patients in accordance with such knowledge, it is hopeless to expect a more rational system of therapeutics than what at present prevails.

The relation which hygiene holds to the vital power, is too obvious to require explanation. Hygienic treatment, is simply food treatment. Unless food of a proper kind, and in proper quantities, be supplied to the organism, it is a fact known to every one that the vital force will speedily cease to act.

During the existence of acute disease, hygiene can only be regarded as holding a subordinate position with respect to any direct influence which it may exert upon the curative power of the organism ; but when recovery becomes fairly established, or where the animal is debilitated, or threatened with disease, no matter from what causes, it is to all intents and purposes the principal ground upon which the veterinary surgeon should base his hopes of a result favourable to his patient.

The duties comprised in, and related to, hygienic treatment, may be arranged under the three following heads ;—

I.—Dieting.

II.—Housing.

III.—Clothing the Patient.

These will be found to include all that is necessary in this department of our treatise.

I.—Dieting the Patient.—The Dieting of a sick horse is at times a matter of nicety. Two extremes in practice are

to be avoided; that is, neither to give the animal too much nor too little food. Some people encourage the appetite too eagerly, while others are almost afraid to allow a sick horse to even look at food. During the early stage of the most acute maladies, it is seldom the patient will partake of food. No anxiety need be manifested on that account. Loss of appetite is but an effect of the disease; and if the disease can be subdued, the desire for food will gradually return. When it does return, encourage it by the allowance of small quantities of food at a time; and let it be of a nature which is at once nutritious, and easy of digestion. In a general way, cooked food should be resorted to. It should be cooked with the greatest care, and given at a temperature agreeable to the animal.

The common articles which I prescribe for sick patients, and which I shall enumerate, and afterwards to some extent consider, are the following:—

FLUIDS.

Water	Linseed Gruel.
Barley Water.	Sago Gruel.
Rice Water.	Hay Tea.
Oatmeal Gruel.	Milk. Milk and Water.

SOLIDS.

Bran.	Speared Corn.
Hay.	Oatmeal.
Rice.	Carrots.
Malt.	Turnips, Raw and Boiled.
Oats Boiled.	Mangold Wurzel.
Barley Boiled.	Green Clover.
Wheat Boiled.	Grass.

The following articles I have already treated upon at pages 35, 38 and 43, namely:—Water, hay, and oats; while others in

the list, are so well known, and their effects so well understood, that any further reference beyond naming them is unnecessary. Avoid the giving of huge scalding hot mashes, made of bran, oats, or linseed,—a mess fitter for an hippopotamus than a horse having a languid stomach, and a frame weakened by acute disease.

WATER.—Of the various articles of a fluid kind named in the above list, water must be regarded as the basis. Cold water will on many occasions prove not only grateful, but salutary in the highest degree to a sick horse. Warm water is insipid; while gruel, and in short, fluid mixtures of any kind, if constantly placed before the animal, speedily produce nausea and disgust. In such cases, cold water will be taken with avidity, and relished to an extreme. The quantity to allow at one time, will depend upon circumstances: two or three quarts will not be productive of injury, unless repeated too frequently.

Pure soft water, as stated at page 43, is alone proper for horses. Rain water is relished by numbers, when they are accustomed to it; but if caught in large towns, or where manufacturing is carried on extensively, it is neither good, nor palatable as an article of diet.

BARLEY WATER.—Barley water is a very palatable drink, if prepared with care. It is serviceable in the generality of diseases which are of a low depressive character, such as typhoid pneumonia, idiopathic and sympathetic fever, and other states of a similar kind. It is also what may be considered an excellent diuretic; that is to say, if the fluid be drank copiously, a free secretion of urine will be the consequence. It should be made from what is called "pearl barley;" or if made from the common article, the grain should first be crushed, and after being boiled, the liquor should be strained

through a fine sieve. One pound of pearl barley will require about two gallons of water. The way to prepare barley water is simply to let the water and the barley boil slowly together. When the barley is boiled sufficiently (which may be known by its soft pulpy condition), strain off the liquor, and when cool it is ready for use. The barley after being boiled, if mixed with a small quantity of bran, may be allowed as food.

Rice Water.—Rice water, when properly prepared, is a pleasant beverage. Many horses prefer to drink the simple rice water; others, with a little salt added; and others again, if slightly sweetened with sugar. It is an excellent diluent to give in chronic diarrhœa, after an acute attack of the disease. In addition to the rice water, the rice itself may be allowed as food, either alone or mixed with a little bran.

Rice, such as can be purchased from any of the ordinary retail grocery establishments, is of three kinds, viz., Carolina, Arracan, and Patna. The two last named are of an inferior quality; the best rice is the Carolina.

Prepare the rice water as follow:—Pour a pound of Carolina rice into a large-sized pan, and add to it nine quarts of water. Let the whole boil very gently for two hours upon a slow fire; then strain it through a sieve, and when the liquor is cold it is ready for use. From one to two quarts of the liquor may be allowed at a time, repeated two or three times a day.

Oatmeal and Linseed Gruel.—All kinds of gruel are easy to make, if the preparer understands the art of making them. The secrets of the process are not difficult to learn; and I would strongly advise everyone having pretensions to be a groom to learn how to cook properly those articles of diet which are either regularly or occasionally required for the horse. Care should be exercised in preparing oatmeal gruel; otherwise it will be smoked—a state which is sure to disgust the patient.

Linseed gruel, unless made with similar care, is very likely to become burnt to the bottom of the vessel. The best mode to prepare it, is to stew the linseed in a large earthenware pot. This process, however, is slow, so that more time is required in its preparation than in boiling it. Some horses prefer a mixture of both kinds of gruel; and to some, oatmeal gruel is rendered more agreeable by adding salt or a little milk. Gruel is unpalatable when cold or when thick. It should be given a little under blood heat, and of the consistency of milk. (See p. 73.)

SAGO GRUEL.—Sago gruel, if properly prepared, is greatly relished by horses. A quarter of a pound of the best sago, in five pints of water, will be the right proportions with which to make it. The sago combines entirely with the water, forming, when cold, a gelatinous mass. It should be given warm, and reduced in consistency either with tepid water or with equal proportions of warm milk and water. The addition of a little sugar renders it more palatable to many patients.

HAY TEA.—Hay tea is made by placing a small quantity of hay in a clean bucket, or any other vessel of a size suitable for the purpose, and then pouring boiling water upon the contents. The vessel should then be covered, and placed aside until the liquor becomes cold, when it will be found of a pale brown colour. In this state it should be poured through a sieve or coarse cloth, and is then ready for use. It is seldom that patients will drink it with the same avidity as they will drink rice or barley water, or milk and water. Sometimes it will be found best to mix together hay tea and milk in equal proportions. The hay used for tea should be free from dust, and not in the least mow-burnt.

MILK.—MILK AND WATER.—Milk is one of the most valuable diluents we possess; and there are but few horses which will not drink it with avidity. It is best for a sick

horse after it has been taken from the cow eight or ten hours. The cream that is at the top should be removed prior to the milk being given to the patient. New milk from a well conditioned cow is generally too rich, unless treated as directed above, or freely diluted with water. If the object be to give the animal the benefit of the milk as food, warm it after removing the cream, and allow the patient about three quarts at a time. It may be repeated three or even four times a day; but if required as a diluent merely, combine with it an equal quantity of tepid water. Its flavour will be greatly improved by the addition of a little salt.

Bran.—Bran is an indispensable article of diet for sick horses. It should be clear and glossy in the colour of its scales: the scales should be of a moderate size, and perfectly sweet to the smell. Fine bran is unfit for sick horses. Bran may either be given alone as a mash, or mixed with boiled corn of any kind. A certain degree of nicety is required in making a mash. The common practice is to place a certain quantity of bran within a bucket, then to pour hot water upon it, and stir the mass, and give it to the horse immediately. To prepare a mash properly, proceed as follows:—First, pour the bran into a clean bucket, and add to it a teaspoonful of salt, then pour upon it the requisite quantity of boiling water, and in doing so contrive to let the water run upon nearly every portion of the surface of the bran, then immediately afterwards spread a thin coating of oatmeal upon the mass, and upon the oatmeal a dry covering of bran, then cover the vessel with a clean sack or a thick woollen rug, and place the whole aside in a cool place for about half an hour; after which remove the covering from the vessel and lightly stir the contents: it is then ready for the patient. This plan of preparing a mash will both thoroughly steep the bran, and at the same time preserve its aroma. The

same practice should be pursued when boiled barley, or oats or linseed, is given in combination with the bran.

HAY.—Hay, as an article of food for healthy horses, I have already treated upon at page 35. The giving of it as part of the diet of a horse when ill, will depend upon circumstances. It will generally prove injurious if given to a patient affected with epidemic catarrh, more especially if the disease be associated with that low typhoid state of the system, so common in this form of disease. The following symptoms are amongst the most prominent which forbid its use. It should not be given when the pulse is feeble, quick, and irritable,—when the digestive organs are in a foul state (which state may be recognised by the presence of a soapy-looking tongue, attended with clamminess, a bad smell of the mouth, and rapid variation of the temperature of the body),—and when the nasal membranes are pallid, or of a dull leaden colour. All these are symptoms which forbid hay being allowed; and yet it is not improbable that a patient so affected will prefer it to any other kind of food. When hay is allowed to a diseased animal, it should be selected with care, and sparingly given.

RICE.—Rice is is an excellent article of diet for sick horses. It should be cooked and prepared as though intended for human beings. I always direct it to be stewed in water, and afterwards mixed with milk, and slightly sweetened with sugar. I only prescribe it for well-bred horses when ill, and occasionally for delicate feeders. Coarse-bred and robust horses do not require such a refined food. A lesson from the cook of the establishment will perhaps be the most direct mode of the groom acquiring a proficiency in the preparation of rice.

SPEARED CORN.—Speared corn is simply corn in a sprouted state. The way to prepare it is as follows:—Put the requisite quantity of grain (either oats or barley) into a bucket, and pour

upon it as much cold water as will suffice to thoroughly cover the corn; then place the vessel aside for twenty-four hours in a cool shady place; at the end of which time pour off the water and spread the corn upon the floor at least two inches thick, and there let it remain until its sprouts. It is then ready for use. I frequently prescribe speared corn for sick horses during the convalescent stage, when the appetite is languid, and the system low and feeble. Too much should not be prepared at once, in case it is likely to be required daily for some time, as it soon becomes sour and musty.

MALT.—"Malt," says Blaine, "forms an excellent cordial in cases of debility, and, when continued, it becomes a permanent tonic. It has also some pectoral qualities; but in active inflammations of the chest it is too stimulant. Malt is also an excellent alterative: in farcy, grease, and also in mange, when accompanied with emaciation, I have used it with marked efficacy; but in such cases it should be given in considerable quantities without admixture with other corn, and even with as little hay as possible." Malt should be given as a mash mixed with bran.

GREEN FOOD.—Carrots are excellent fodder for the horse, both in health and sickness. They are a very nutritious vegetable; and there are few horses but will partake of carrots when most other kinds of food would either be injurious or distasteful. They are usually given to the sick animal when convalescence is established. It is better to wash them clean before they are given.

Swede turnips are sometimes preferred to carrots; as an article of diet, however, carrots are greatly superior. Turnips are heavy, watery, and far less nutritious.

Green clover, rye grass, and food of a similar kind, frequently prove of marked benefit to a sick horse. Care, however, should

be exercised in their use, otherwise they may not only injure the animal, by aggravating the disease, but colic may supervene, and the worst consequences speedily follow. It is better to mix the green fodder with a little hay, and give small portious of this at a time. Lints and oats, or tares, are a heavy, cold, and watery diet.

II.—Housing the Patient.—If the patient be attacked with disease of an acute, or sub-acute nature, as inflammation of the bowels, or inflammation of the lungs, or epidemic catarrh, it is better that the animal be placed in a box, which should be *roomy, moderately well lighted, perfectly clean, well ventilated, of a comfortable temperature, and well littered with clean dry straw.*

For the following reasons, diseased animals should always be separated, if practicable, from those which are healthy, viz: if the disease be of an infectious nature, it may prevent it from spreading,—the animal is not disturbed by other horses going out, or coming into the stable,—the temperature of a loose box can be maintained at a more equable rate; and lastly, if the disease be of a violent nature (as inflammation of the bowels), the patient if allowed to remain in a regular sized stall, would probably severely injure and bruise himself, destroy the wood-work, and perhaps inflict injury upon the limbs of other horses. While treating upon the subject of housing, the following rule may be laid down for cleaning the box, if the patient is likely to remain in it for two or three days.

Either remove the old straw at the bottom of the bed every day, or do not touch it until the patient has recovered. If the old straw is removed once every two or three days, the urine and dung with which it will in places be saturated, will have decomposed, and upon turning it up a powerful effiuvium will be emitted, and if taken away, the temperature of the place will

fall considerably, which, in cold damp weather, may be productive of bad effects. If allowed to remain without being disturbed, and fresh dry straw spread over the old, no such result probably will follow, if the ventilation be good. The best plan to pursue, is to gather up the dung, and allow all the straw to remain until the patient is recovered; or else to remove the old litter at least once every day. The straw supplied to diseased patients, should *be chopped or cut into lengths of about six or eight inches.* The advantages gained by this will be evident. The patient can move its limbs with greater freedom; the box can be cleaned with greater facility; and the urine will be more readily absorbed.

The temperature of the box or stable containing a sick horse, should range from 62° to 64° Fahrenheit, during the winter season. In summer it should be maintained at a similar temperature. Loose boxes at many establishments are perfect pests. They are exposed to the full glare of the sun; and closely contiguous to them, are perhaps large heaps of half rotted manure. This, in summer, attracts thousands of flies, numbers of which crowd into the box, and irritate the poor animal beyond measure. If a more retired situation cannot be had, the manure should be removed, and the doors and windows fitted with gauze wire or perforated zinc.

III.—Clothing.—The kind, the quantity, and the way of clothing a horse, will depend upon the season of the year, the nature of the disease, the breed of the patient, the kind of box and its position, and the previous habits to which the animal may have been inured. If the box be in an exposed position, or facing the north, or the west, and if the season of the year be unfavourable to the patient, and the disease be of an acute nature, the clothing will require to be plentiful, and of a very

comfortable kind. But if the weather be warm and agreeable, if the box faces the south, and is well sheltered by other buildings, the clothing need only be light,—perhaps, a linen sheet, or a thin cotton rug may prove sufficient.

If the habitation be comfortable, we are not advocates for much clothing. For a coarse bred horse, we seldom use more than a single woollen rug thrown evenly over the body of the animal, and fastened lightly with a surcingle. With high bred horses, it may at times be necessary to have a hood, a breast cloth, and woollen bandages for the limbs, and perhaps an additional rug as well. The best criterion however to judge by, is the state of the coat of the patient. If the hair rises, and the animal becomes chilly, clothe more heavily; but if it remains glossy, the temperature of the body equable, and the animal appears comfortable, it is all that is required. In some diseases, as in inflammation of the bowels, it is impossible to clothe the patient. The violence of the animal will prevent it. But when recovery has commenced, and the violence disappeared, it is then necessary to clothe well, in order to assist the restorative powers as far as possible. It is impossible, however, to lay down rules to meet the exigencies of every case. Suffice to say, if the patient be clothed too heavily, an uncomfortable state of excitement is produced; while too little clothing is also prejudicial. *The skin is the index which, if closely noted, will at all times prove a sure guide in this matter.*

END OF PART I.

TO THE READER.

TECHNICAL PHRASES AND SCIENTIFIC WORDS.—For the meaning of the various Technical Phrases and Scientific Terms used in PART II., the reader is directed to the GLOSSARY appended to this work.

MEDICINES.—Throughout the following pages the word "dilution" will frequently occur. It is necessary to explain the term: a *dilution* of medicine (to use a common form of expression) is medicine reduced in strength. The 1st dilution of a medicine is made by mixing two ounces by measure of the strong tincture with fourteen ounces of spririts of wine; the 2nd dilution, by mixing two ounces by measure of the 1st to other fourteen ounces of spirit; while a 3rd dilution consists of two ounces of the 2nd to fourteen more of spirit.

ARSENIC is prescribed in most instances of the 3rd dilution: experience having proved that (as a general rule) it is not safe to use this remedy in a stronger form.

PART II.

Section I.

ON THE DISEASES OF THE HORSE, AND ON CERTAIN GENERALITIES IN CONNECTION WITH THEIR TREATMENT.

DISEASE AND ITS CAUSES.
EXAMINATION.
DIAGNOSIS.
PULSE.
ORGANS OF RESPIRATION.
ORGANS OF DIGESTION.
DEPURATING ORGANS.
PATHOGNOMONIC SYMPTOMS.
SELECTION OF A REMEDY.
MEDICINE AND ITS ADMINISTRATION.
LIQUID MEDICINES.
BALLS.—POWDERS.
ACCIDENTS.—SUDDEN ILLNESS.
POULTICES.
FOMENTATIONS.
INJECTIONS.
BLISTERING.—FIRING.—SETONS.—ROWELS.
PURGATIVES.—DIURETICS.
BLEEDING.

The Diseases incidental to the horse are numerous and diversified. Many of them bear a close resemblance to those of the human being. More extended observations upon the maladies common to the two would prove highly beneficial to both surgeon and veterinary surgeon; and it is much to be regretted that comparative investigations of the nature spoken of are not more common than at present.

Equine diseases possess a twofold relation to the animal economy. Some involve the organism at large; others are of a local character, and do not produce the least effect beyond the

part affected. Glanders and scarlatina are diseases typical of the former, while a slight eruption of the skin may be considered as typical of the latter.

To treat in detail upon the general characters peculiar and contingent to both of the classes in question,—to shew their analogy,—to trace the causes productive of each to their most intricate sources, together with the pathognomonic symptoms peculiar to one or both,—would be a work far transcending what is intended in a volume like the present. In this volume, I shall treat upon both classes briefly, merely leaving out what the reader would consider matter too professional in character, and confine myself strictly to what is plain and practical. It is impossible, however, to write a book which shall enable amateurs to dispense entirely with veterinary surgeons. The most skilful mechanist could never write a treatise which should so explain the construction and management of the steam engine, as to enable any tyro to manage it. Experience, and that peculiar tact, which distinguishes the skilful in every department of usefulness, are essential to its management. This will be conceded by every rational person. Now, if a book of this character cannot be written with reference to the steam engine—a thing which is inanimate,—how can it be done with respect to the treatment of the diseases peculiar to the horse?—seeing that the latter have their seat within a living organism a thousand times more complicated in structure than the steam engine. Gentlemen, however much they may study disease, from the limited sphere in which they are necessarily placed, can never become fully qualified to treat those dangerous and complicated maladies, which a veterinary surgeon of even moderate practice finds himself almost daily called upon to combat. I shall, therefore, purposely omit details of an abstruse character as to the nature and origin of disease. What gentlemen or amateurs

need, are plain descriptions of the diseases and injuries to which the horse is liable, together with equally plain directions as to the treatment best adapted to the requirements of each particular case.

Every owner should possess a good general knowledge of those causes which are the most productive of both diseases and injury to his horse. Knowledge of this kind is of twofold benefit. First, in enabling him, by attention and judicious arrangements, to ward off many diseases of a virulent nature; or, where the causes are of a mechanical nature (and not unfrequently continuous in character), to promptly remove them; and thereby afford equally prompt relief to a suffering animal.

The common causes of equine disease are bad ventilation of the stable,—allowing the horse to stand in cold draughts when perspiring,—sudden changes in the temperature of the weather,—bad food,—sudden changes in the diet,—scanty and poor diet, such as bad hay, and soft, musty corn,—a diet that is too rich and abundant,—too much labour,—turning horses to grass, during the prevalence of cold and wet, when they are in a state of perspiration, or debilitated from excessive labour,—pricks and injuries to the feet from shoeing, or accidentally "gathering" a nail,—kicks from other animals,—infection or contamination of the healthy from being placed in contact with the diseased,—internal causes, such as weak constitutional energies and deficiency of vital power.

The effect of the causes enumerated above, together with others equally destructive, and perpetually in operation, or in readiness to operate when circumstances of a favourable nature present themselves, are what every one owning horses should be acquainted with. Individuals of this class should also know when a horse travels with comfort,—whether the saddle or the

harness as the case may be, fits properly, or without inflicting pain. They should also know when the animal is fatigued; when properly fed and groomed; and when the feet are properly shod. They should also know when disease is present; or what is of greater importance, when to detect disease in its incipient stages. These are matters not difficult to learn in the extreme sense of the word. Attention and observation will shortly lead the observer to knowledge of the greatest use and importance, not only to his own benefit in a pecuniary point of view, but in all probability, to the increased health and comfort of his stud. Next to man, the horse is the noblest animal in the world. To improve the capabilities of so noble a creature; to preserve him as far as possible from the operation of causes deleterious to his health; and to physically develop his powers to the utmost extent his organization will permit,—is a work alike worthy of the mind and the attention of any man.

Before an amateur can recognise when a horse is diseased, it is first necessary that he should familiarise himself with the general appearances presented by the animal in a state of health; such as the appearance of the eye, the skin, and the hair. The clear florid colour of the membrane lining the nostrils,—the soft regular motion of the ribs, during the act of breathing,—the clear, moist, healthy appearance of the mouth and tongue,—the slow, but regular and full action of the pulse,—the cool state of the feet,—the equable temperature of the skin,—the natural ease with which the animal stands when left alone, together with several other matters of minor importance which, nevertheless, are regarded with interest by every one who may be said to have "a strong affection for his horse;" and every well marked change in the character of which, is at once recognised and estimated accordingly.

EXAMINATION OF THE PATIENT.—DIAGNOSIS.—Having noticed a few of the principal appearances presented by the horse when in health, I have now to treat upon such peculiarities as are manifested by the animal when affected with disease.

Before medical treatment can be resorted to with at least a fair hope of success, it is first necessary to determine the nature and seat of the malady requiring treatment. The determination of the precise nature of the disease constitutes what is denominated its *Diagnosis*, from the Greek word διαγιγμωσκειμ *(diagignoskein)* signifying to discern, or to distinguish rightly.

One of the primary essentials to the diagnosis of a disease is the observer recognising the vital state of the patient; or in other words, to know the peculiar condition of the organism as a whole, with reference to the life force within it; because by this our treatment for the eradication of the malady should, in in a great measure, be directed. The state of the organism will give to the disease whatever peculiarity of character it possesses. If the system, for example, be debilitated from old age, severe labour, insufficient food, or from all these causes acting in association, we shall find the disease to be of the class denominated asthenic. On the contrary, if the system be vigorous, and its vital power unimpaired, the disease will partake of a similar character, and as a natural consequence, our treatment should vary accordingly. An inflammatory disease, when manifested by an enfeebled organism, is very different from an inflammatory disease when the vital force of the patient is vigorous. In the latter case it will be necessary to have recourse to the most powerful remedies we possess, to lower the violence of the disease; while in the former, the way to benefit the patient is to raise the natural force of the organism, and afterwards to support and economise it to the utmost extent in our power. To gain a clear knowledge then of the nature

of a disease, and of the ground whereby its treatment should be directed, *our first duty is ascertain the vital state of our patient.*

The extent to which it may be necessary to conduct the examination will, in a great measure, depend upon the nature of the case itself. In many chronic diseases, for example, a more lengthy examination is required to arrive at a positive knowledge of their precise nature and general relations, than what is necessary to determine the essential nature of an acute disease.

In speaking thus, I would not have the reader understand that every precaution is necessary in both classes of disease; on the contrary, every case, whether simple or complicated—whether acute or chronic—should receive the close attention of the observer. In many chronic diseases, a number of symptoms are occasionally present of a very obscure character (perhaps two or more diseases may be associated) which, to thoroughly unravel and clearly arrange, may require the exercise of all the care and tact of the medical attendant; while in the generality of acute diseases, the symptoms are of so objective a character as to allow of the disease being at once recognised by an observer of even moderate tact and experience. Consequently less difficulty is experienced with regard to acute than chronic maladies; nevertheless, a thorough examination is required in both,—the difference of such examination being merely in the extent to which each is necessary to be carried.

In both classes of disease a similar method of examination will necessarily have to be pursued; the variation of that method depending upon the nature and the seat of the malady.

Causes of Disease.—Our first attention, in all cases, should be directed to ascertain the cause of the disease,

especially where such cause may be of a continuous kind, and where the probability of its removal may exist; or for the purpose of preventing other animals contiguously situated from being affected in a similar manner, as in glanders. A knowledge of the cause of a disease is in every case a matter of importance, but more especially in traumatic diseases, or diseases which have their origin from causes of a mechanical nature.

In idiopathic disease, however, this in most instances will be found impracticable. In idiopathic pneumonia, for example, the removal of its cause is out of our power. The disease may have arisen from exposing the animal to wet, and to cold draughts of wind. All we can do in cases of this nature, is to remove the patient into more congenial circumstances, and cure the disease in the best mode available. In like manner we may remark upon nearly every cause of disease of an idiopathic kind. The search for, and removal of causes is, we repeat, the the most practicable in traumatic diseases. Injury is inflicted upon a part endowed with life, but in what way does, or has the external agent produced the disturbance? Has the offending body injured the part by entering into the structure, and there remaining, as when a foot inflames, and lameness ensues from the entrance of a nail into its sole? If the injury be within a fleshy part, are splinters of wood, or pieces of metal, or pieces of glass within? Where practicable, the cause must be removed, and the patient so placed as to be in a position favourable to recovery; but where the removal of the former is impracticable, the latter will equally require attention.

THE PULSE.—One of the principal guides indicative of the internal state of the animal, whether in health or during the existence of disease, is the pulse. Whatever affects the organism will affect the pulse. As the hands of a clock are indicative of

the state of its works, so is the pulse of the organism. So long as the pulse remains undisturbed, the observer need not be alarmed as to the immediate state of the patient.

The normal pulse varies from thirty-six to forty-two beats per minute. Horses, however, may be healthy with a pulse as low as thirty-four per minute; the average, I should say, is from thirty-eight to forty. The number of pulsations shews the number of times which the heart beats per minute; consequently, the state of the pulse is expressive of the state of the heart.

One of the most convenient places to ascertain the number of beats, and the general state of the pulse, is just within the inferior curve of the lower jaw. Some little practice is necessary to detect it at once. The observer must have the head of the animal held very quiet; the jaws must also be still, when he should feel with the first and second fingers of the right hand for a small artery, or a cord-like structure, against which the fingers must be lightly placed. Presently he will detect a regular, gentle rise. This is the pulse: let him note well the character of the beat; the swell of the artery, as it fills with blood; and the number of its throbs per minute. The healthy pulse will be found to vary considerably, even in the same animal. A variety of causes operate in the production of these peculiarities; such as severe and long continued labour,—exercise,—sudden alarm of the animal,—and food of a highly stimulating kind. The peculiarity of the beat will also be found to vary in different horses, on account of difference in temper and breed. The majority, however, will have a full, slow, and round pulse; in others, whose health is perhaps equally good, it will be feeble and thread-like. The beat of the pulse at night, after the animal has been severely worked during the day, will differ from that of the morning. In the morning, it is generally regular, slow, round, and full; at night, feeble and round, but

intermittent. The reason of this variation is, that the heart is temporarily exhausted, to recover from the effects of which it must have repose; and this repose is partly a cessation of its action. Complete rest of the organ is death. I have in numerous instances of the kind found the pulse to intermit as frequently as every third beat; more commonly, however, about every fifth or every seventh. Now, taking the average pulse of the horse at 40 per minute, it amounts to 2400 beats per hour, and eight cessations per minute (1 in 5, or 240 per hour)—a result in the highest degree important in its consequences to the animal economy. A similar state of the pulse may be observed in the horse during the early stages of convalescence after an acute or exhausting disease. The pulse at such times will be intermittent for several days in succession, which peculiarity will disappear as the strength becomes restored. The principal agents which assist the heart to return to its normal state are time, warmth, and, above all, proper food given in small quantities, and at proper intervals. If medicine is needed, give a gentle stimulant; but even this, if resorted to at random, may prove mischievous in its effects. Judicious hygienic management is the great restorative to health.

As the pulse not only varies considerably with regard to different horses, but occasionally in the same animal from the operation of causes such as above enumerated, I would recommend every gentleman who may be fond of matters of this nature to make himself familiar with the pulse of every horse comprising his stud. He could have a small book wherein to note down such peculiarties as he might consider of interest or importance.

THE ORGANS OF RESPIRATION.—The respiratory organs, like the pulse, will repeatedly indicate the degree of sympathy

which exists between a part locally affected and the system at large. An injury inflicted upon the foot will not unfrequently give rise to violent commotion of the respiratory organs; so that rapid breathing, when the animal stands at rest, accompanied as it generally is with other symptoms indicative of violent disturbance within the system, is not at all times to be regarded as noting the existence of acute disease within the lungs. As a general rule, however, when the lungs are directly affected, there are certain sounds associated with the breathing of the patient, which betoken whether the disturbance be primary to these organs or not. The reader will find the nature and the peculiarties of these sounds treated upon in the section devoted to those diseases incidental to the respiratory organs. A respiration is the result of a double act; that is, it consists of one inspiration and one expiration. The average number of respirations of a healthy horse per minute is about twelve. As a general rule, the pulse of the animal will beat three times during the production of one respiration. The average now given, and the relation of the respiratory act to the pulse, must be understood as strictly referring to the animal when in the stable and free from all excitement.

When the lungs are diseased, the respirations will at times reach from fifty to sixty per minute, or even more,—in short, a very exact limit cannot be stated; they should be always noted, however, with care. To an experienced observer, the manner in which the act of breathing is performed is significant in the extreme. In pleurodynia and pleurisy the act is limited and constrained, attended with a peculiar tremor of the muscles of the sides, a pinched appearance of the alæ of the nostrils, a slight arching of the back, and if the sides are pinched or pressed upon, a peculiar grunt is emitted. In tetanus the respiratory act is also limited, and in many respects closely

resembles in character the preceding description; but this, in tetanus, arises more from inability of the patient to obtain a sufficiency of air (owing to the rigid condition of the respiratory muscles) than from the existence of primary disease within the muscles themselves.

In sympathetic fever the respirations are quickened, but the motions of the chest and muscles of the trunk do not present an appearance of constraint; the acts are rapid and free, and flow into each other readily.

In noting the peculiarities of the respiratory movements, there should be an entire absence within the box of all external excitement, otherwise accurate observation will be out of the question. The observer should note the character of the movements, whether they are quick and deep, or short, constrained, and superficial. Does the patient cough? and if so, is the cough short, dry, hard, and superficial; or is it deep, moist, loud, and rattling? or what are its peculiarities? or does it possess any? The observer may also apply his hands to the sides of the chest, and ascertain by the act if the patient shrinks from their contact? and if so, if the shrinking be attended with a low, painful grunt, or if it excites the animal to cough, or produces a tremor within the muscles investing the ribs and the sides of the abdomen.

By noting the respiration when disturbed, the same may be stated of such disturbance as of that which may exist within any other class of organs, namely if it arises from primary derangement. A close attention to all the attendant phenomena will enable us to ascertain the state of the organs themselves; while, on the other hand, if the disturbance arises from sympathy we ascertain the nature of the susceptibility of our patient, so that in either case we obtain a knowledge of facts

which are in the highest degree important in enabling us to rationally treat the animal.

Organs of Digestion.—The organs of digestion are subject to a number of destructive diseases, and require to be investigated with the greatest care by every mode which may prove to be of practical value.

The teeth are liable to decay and to irregularities of growth, and should be carefully examiued for the existence or non-existence of one or more of these conditions.

The tongue should also be examined for evidence of gastric derangement. Does the organ possess a clear, moist surface, or is it soapy, and does it emit a nauseating effluvium ?

Attentiom should also be given to the state of the appetite? Is it good, bad, or indifferent ? Is it morbidly ravenous? Does the animal lick the walls of the stable ? or, does he eat earth, or mouldy, half-rotted hay, in preference to hay which is good.

Look also to the state of the dung. Is it clay-coloured ? and does it emit an odour similar to that of rotten eggs ? The above, together with many other peculiarities of a minor character, the observer should make himself acquainted with before he can diagnose those diseases which are peculiar to the digestive organs.

Depurating Organs.—By the depurating organs the reader is to understand that class of organs whose functions aid in ridding the system of what (if allowed to remain within it) would prove injurious to its welfare. This, perhaps, if carried out to its full legitimate extent, would embrace an inquiry into the functions of nearly every class of organs and tissues of importance within the body; as many of them,

while performing other important functions, are at the same time performing some function of a scavenging nature. The lungs, the liver, and the large intestines, are organs of this character.

Amongst the principal of the depurating organs I may mention the skin and the kidneys. The skin, like other great organs of the body, is subject to disease not only within itself, but is also liable to derangement from sympathy.

The presence of worms within the intestinal canal, if they exist in excess, will cause the skin to present a dry, unthrifty appearance; a defect which arises in part from intestinal irritation, but mainly, perhaps, from deficiency of nutrition.

In examining the skin, note its general appearance. Is it dry, and the hair pen-feathered? Does the patient rub the skin a good deal? Is it denuded of hair? and if so, is the absence of hair general, or local merely? Do ulcers exist upon it? If so, where are they situated, and what are their special characters?

I have spoken of the skin manifesting sympathy: perhaps no other organ of the body so readily manifests sympathy as the one in question. Irritation in a distant part of the digestive apparatus may manifest its effects in a distant part of the dermal tissues. Disorder of the stomach, if long continued, is sure to produce disorder of the skin, so that in our examination of the latter this proneness to be affected sympathetically should never be forgotten.

Organs of Locomotion.—Rules for the examination of the organs of locomotion the reader will find more fully detailed in the section which treats upon lameness; where these organs, however, manifest derangement beyond what is merely local, it will be necessary to examine them with every care.

With few exceptions the signs they afford will refer more to peculiar states of the great organs of life, and to the nervous system especially, than to any disorder of a direct kind within themselves. In some of the most important diseases of the nervous centres, the state of the limbs afford the chief indications by which we are enabled to judge of the nature of the central disturbance. Paralysis and tetanus are familiar examples of the truth of what is here stated.

In regarding the locomotive organs, observe how the animal stands and walks; also, if the limbs are swollen, and the character of the swelling; also their temperature, or if an offensive discharge from any part be associated with the swelling. Examine also the joints—are they swollen, or hot and tender?—symptoms which are common in rheumatism and in joint evil, a disease which frequently affects foals prior to their being weaned.

Pathognomonic Symptoms.—In concluding my observations with respect to the examination of the patient, I will do so with a few remarks, urging upon the observer the desirability of carefully noting every peculiarity which strictly belongs to the disease itself.

Every disease of importance presents symptoms of a two-fold character. 1st, common or general symptoms; and 2nd, pathognomonic symptoms. The common or general class are those, one or more of which are present in almost every malady; while the pathognomonic class are those which are peculiar to the malady only. The importance of this to the observer will be best elucidated by reference to the symptoms of a well marked case of disease. The following are the symptoms of a case of spasm of the larynx, (I choose a disease of an extreme character, because it will better illustrate the matter in hand):—

Spasm of the larynx is frequently a sequence of laryngitis; sometimes it occurs as a primary affection. The attack frequently manifests itself suddenly, and sometimes gradually.

The symptoms of the disease, when the attack is violent, are the pulse is weak and tremulous; the eyeballs have a wild, staring, haggard look; the surface of the body is hot, and covered with an abundant and steaming perspiration; the motions of the animal are uncertain and turbulent; the breathing is violent and difficult, and as the closure or spasm of the larynx increases, the violence of the respiratory act becomes more vehement and alarming. The breathing is attended with a harsh, rasping sound; sometimes it is closely similar to the noise elicited by sawing wood, and sometimes it becomes sharp and shrill, like the sound of a trumpet. The affection is remittent, and not unfrequently the attack will commence with the rasping noise, and gradually increase in severity, until the shrill trumpet sound is heard, when the violence either remains stationary for some time, and afterwards subsides; or, should it increase in severity, and relief be not promptly afforded, the patient will die of suffocation.

If we analyze the above symptoms, we find some which are common to a number of diseases and states of the organism, and some peculiar to the disease in question. *A weak and tremulous pulse* is present in epidemic catarrh, typhoid pneumonia, and other diseases. *The surface of the body hot, and covered with an abundant and steaming perspiration:*—This is a state of the skin common to the animal in health immediately after having undergone severe exertion, and very likely has been observed hundreds of times by every individual conversant with horses. *Breathing violent and difficult:*—These are symptoms which are present in broken wind, temporary spasm of the air cells of the lungs, inflammation of the lungs, and in

other diseases of a similar character. The only symptoms pathognomonic of the organ affected, are the *rasping, sawing, and trumpet-like sounds*, the existence of which indicate the nature of the affection in a way which is unmistakeable to the experienced observer.

In all cases then, we repeat, those in attendance upon the patient should, upon every occasion, fix their attention upon the pathognomonic symptoms of the disease; by doing so, they go direct to the centre of the malady, and at once strip the matter of all obscurity and confusion.

SELECTION OF A REMEDY.—Having thoroughly examined our patient, and arrived at a satisfactory conclusion regarding the nature of the disease, the next thing is to select the proper remedy with a view to the removal of the malady. Upon this, however, my remarks will be brief. The principal diseases to which the horse is subject are described in the present treatise; together with such details respecting their medical, surgical, and hygienic treatment, as will enable the reader to select that remedy the best adapted to meet the requirements of the case.

I will conclude this portion of the present section by laying down a few plain rules relating to drugs and their exhibition in disease:—

I.—GENUINENESS OF DRUGS.—The superintendent of a case of disease should possess a moral certainty that the remedy he may resort to is genuine; without the drug be genuine he must expect the result either to be *nil*, or in the highest degree doubtful.

II.—SIMPLE MEDICINES.—Keep to simple medicines. One of the greatest evils in veterinary practice is that of

mixing a number of drugs together, and giving the same in a mass. *The more simple our practice, the more certain our results.* This may be set down as an axiom in the treatment of disease. By noting well the state of our patient, and by the administration of a simple medicine, we are in a condition to accurately watch its effects should a change either for better or worse supervene; but if compound medicines are used, and one or other of such changes should occur, we may attribute it to the action of the medicines, though we should be at a loss to know to which of the ingredients it was due; so that, if no other advantage arises from the giving of a simple medicament, that of certainty to the mind of the medical attendant as to which is the curative or disturbing agent, is to be regarded as a solid advance in the right direction.*

III.—REMEDIES.—If a remedy does not act at once, the attendant should not despair. Some diseases do not yield until the remedy has been given several times in succession. If the attendant is satisfied, however, that he has taken every precaution in accurately diagnosing the disease, and in selecting the appropriate remedy, he should persevere in its administration; and success in most instances where cure is

* Lest what I write be misconstrued, I will further explain what I mean by the term "simple medicine." Many vegetable medicines consist merely of spirits of wine and the juice of the plant whose name the medicine bears. Tincture of nux vomica is an example of the kind. Other medicines, again, are made by mixing two together. Tincture of the muriate of iron is an example of this nature; it is composed of iron and muriatic acid. But muriate of iron I class as a simple medicine, but if the tincture of nux vomica was mixed with the latter, I should call the result a compound medicine, and reject it accordingly. If it was necessary for a patient to have both, I should give them alternately, allowing intervals of some hours, or perhaps a day, to intervene between the giving of each medicine.

possible will reward his perseverance. In chronic diseases a beneficial result can seldom be observed for several days or even longer; while, in acute diseases, as in inflammation of the bowels, relief is sometimes speedily obtained. Where, however, a beneficial result is not obtained in acute and sub-acute maladies in the course of six or eight hours, the symptoms should again be carefully gone over, and a new remedy selected; which should be given either alone or in alternation with the old one, and its use steadily persevered in. Attention and perseverance are the great essentials to success.

IV.—AMENDMENT OF PATIENT.—If a remedy be administered to a diseased patient, and amendment follows, which is sudden or slow, as the case may be, but nevertheless well marked, either give the remedy less frequently or in a less quantity, or do both,—the adoption of which of the three courses will depend upon the judicious management of the attendant. It not unfrequently happens, however, that the following will take place:—The patient will improve to a certain degree, when the improvement will stop. In all such cases the patient must be examined with every care, and another and more appropriate remedy selected.

V.—REPETITION OF MEDICINES.—The repetition of medicines will depend upon a variety of circumstance, respecting which no definite rule can be laid down. In very acute cases it may be necessary to repeat the medicine every ten or fifteen minutes; in sub-acute diseases every hour, or every four hours, or every twelve hours, as the case may be; while in chronic diseases an interval of twenty-four hours may be allowed to elapse between its repetition. This, like many other things of a similar nature, will depend upon the

experience and judgment of the attendant. I say to him, however, give the medicine time,—let him learn to wait for its effects.

VI.—MEDICINE IN CHRONIC DISEASE.—In all cases of a chronic nature, administer the remedies to the patients after they have fasted for some time; then let them remain without food for a short time.

MEDICINE AND ITS ADMINISTRATION.—The medicines used in veterinary practice are numerous, and they are adminstered to the horse in different ways, but principally in the liquid state; sometimes, however, in the form either of a ball, or a powder.

The liquid medicines prescribed for the cure of the various diseases treated upon in the following pages consist, for the most part, of different tinctures. Great care is necessary in purchasing drugs; otherwise, in cases where benefit would be readily effected by their agency, no result will follow their administration, simply because of the adulteration which is so common in articles of this description.

ADMINISTRATION OF LIQUID MEDICINES.—The best description of instrument for administering liquid medicine is a horn. The horns in general use are too big. One holding two ounces of water will be sufficiently large for any ordinary purpose. Numbers of horses will not allow a horn to be placed within their mouths unless compelled. The best way to deal with such animals is to fix a twitch upon their nose; this generally will cause the most violent to remain quiet. Some horses resist medicine being administered to them, because they are brutally pulled and knocked about.

The proper way to administer liquid medicine, when the quantity is not excessively large, is to proceed as follows:—

The operator must stand near to the *right* shoulder of the animal, and handle him firmly, but at the same time lightly, while a second person should stand upon the *left* side to assist in steadying and holding up the head. The operator then advances close to the side of the head, and places his left hand across and beneath the lower jaw, immediately behind the back part of the lower lip; the head is next elevated to the required pitch, then with the right hand firmly holding the horn filled with the medicine, the latter is gently forced into the mouth of the patient as far within as the back part of the tongue, when, by a slight, upward motion of the small end of the horn, its contents are poured out; the instrument is then withdrawn, and the head is maintained a few moments longer in its elevated position until the liquid is swallowed. Should it be necessary, however, to administer a pint or more of medicine, or should the horse be unruly, it is the best to place a twitch, having a moderate length of handle, upon his nose, to enable the assistant to readily hold the head to the required height.

In giving a drench, the operator should carefully attend to the following essentials, if he wishes to perform the operation properly and safely—

I.—Hold the horse firmly with the left hand, and with the right pass the horn well back into the mouth.

II.—Avoid pushing the horn too far back or too violently into the mouth, because the animal may thereby be excited to cough.

III.—Do not administer a second horn of liquid until the one given prior to it is swallowed.

IV.—Do not hold the head of the patient to an inordinate height, otherwise he may experience great difficulty in swallowing. Horses cannot swallow when the nose is held too high, and the neck stretched to an undue extent.

V.—Should the patient cough at any time during the administration of medicine, *instantly* lower the head; if this be not done, serious consequences to the animal may result.

VI.—If coughing is caused, let the animal thoroughly recover from its effects before the drenching process is renewed.

Danger attending the Administration of Liquids.—It is dangerous when a portion of the liquid enters into the windpipe; and such a consequence may readily occur. With an experienced operator, however, a result of this nature is not likely to take place. The danger is in the animal coughing while in the act of receiving the medicine from the horn, and in the operator not liberating the head at the same moment.

By lowering the head, and ceasing to give medicine at the moment coughing is caused, and by allowing the animal to remain quiet until the violence fully subsides, there is no danger.

The symptoms by which the presence of extraneous substances within the windpipe may be known are the following:—

The patient commences *suddenly to breathe violently.*

The suddenness of the attack, when giving medicine out of a horn or a bottle, is a certain indication of what has occurred.

The breathing is laboured to an extreme degree; the air, in fact, is drawn through an obstructed passage. There is also much violent, almost incessant, coughing; shivering of the body;

rattling, gurgling sounds in the windpipe; violent beating of the heart, and disturbance of the pulse; cold, clammy sweats, and great restlessness. Sometimes, though rarely, death results. In the generality of instances, however, particularly if the fluid be merely tincture of some kind freely diluted with water, the violence will gradually subside; but if the liquid be dense, as thick gruel for example, the symptoms are not only more violent, but the effects are more prolonged, and more likely to be productive of a fatal result.

POURING MEDICINE DOWN THE NOSTRILS.—Many individuals advocate the pouring of medicine down the nostrils of the patient, which is highly reprehensible; and, if resorted to by an unskilful operator, or one not aware of the dangerous results which may ensue, the consequences I have just described are almost certain to supervene. In certain cases of a very extreme and peculiar kind, I have on several occasions been compelled to administer medicine in this manner; but unless imperatively required, it should not be practised, and even then none but a veterinary surgeon should undertake the operation.

MEDICINE MIXED WITH FOOD.—Another way of giving medicine is to pour the necessary quantity into a large clean dish, and add to it a little bran or corn, and present it to the patient. It is rarely the animal refuses to eat what is thus offered, unless the drug be very unpalatable. This method will often be found successful when the violence of the patient renders any other impracticable. This mode, however, can only be resorted to with patients affected with a sub-acute or chronic disease; for if it be of any other character, the animal will not eat.

ADMINISTRATION OF BALLS.—The giving of balls to horses, like the giving of drenches, is to some extent attended with danger, especially if the operation be performed by an unskilled person. The danger attending the administration of a ball extends to both patient and operator. Instances occasionally occur of a horse having his tongue pulled from its attachments, or otherwise injured in a very severe manner. Sometimes the operator is severely bitten upon the hand, and the bones of the fingers are crushed by the teeth. Accidents, however, of such severity are not common; and when they do occur, they may in a great measure be fairly set down as arising from the ignorance or awkwardness of the operator.

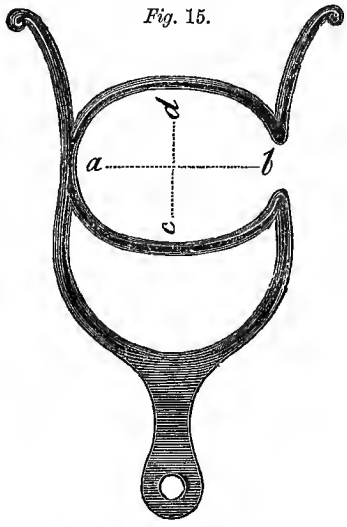
Injury to the tongue of the animal frequently happens from the operator seizing hold of the organ and dragging in out of the mouth, much in the same manner as he would drag at a cart rope. The horse, feeling acute pain from the violence of the proceeding, starts back with alarm, while the operator continues to pull forward with perhaps greater force; and the result is, if the pulling be continued, that the organ is perhaps irreparably injured.

The proper way to administer a ball is as follows:—1st, Place a halter upon the head of the animal, which widen at the bottom, so as to allow of the jaws being readily opened to their full extent; then tie a knot with the halter shank close to its noose, then turn the animal round in the stall, and place an assistant to steady its head. The operator should then insinuate his left hand into the mouth of the patient, and lay hold of the tongue, which he must draw gently forwards, pressing the organ firmly down to the jaw, and at the same moment firmly placing the thumb beneath the under jaw, thus fixing the tongue as it were in a vice; then, with the ball held between the thumb and the finger of the right hand gathered together

so as to form a point, the hand is rapidly passed into the mouth of the patient back to near the entrance of the throat, where the ball is deposited and the hand rapidly withdrawn, after which the operator steadies the head of the horse until the medicine is swallowed, a fact which may be readily known when it takes place, if the operator looks to the left side of the neck.

By securing the tongue of the horse as directed, two advantages at least are gained; the first is, if the animal should attempt to get away, the organ cannot be injured; and secondly, so long as the operator firmly holds the tongue down to the jaw, a groove or channel is formed for the right hand to slide upon during the act of giving the ball; while, again, by holding the fingers of the right hand in close contact, and at the same time pointed forwards, the teeth of the patient cannot injure them with the same facility as though the fingers were spread out.

Fig. 15.



BALLING IRON OR GAG.

For my own part, I seldom or ever give balls without using what is called a balling iron or gag, which is an instrument for the purpose of opening the jaws of the horse, and retain them so for the short time it may be necessary to occupy in the giving of the ball. The proper form of the gag is shewn in the annexed engraving.

The size of the instrument should be as follows:—From *a* to *b* four inches, and one-eighth within, and from *c* to *d* three inches, and three-eights within. It should be open at the right side, by which means, if the patient becomes unruly at the time it is used (which occasionally will occur) the hand of the operator is at liberty in a moment.

The best way to construct a gag as represented is, in the first instance, to make the oval complete upon every part; then make the instrument red hot, and while it is of a glowing heat cut a piece out of the side of the size required; then file smooth the rough ends and edges; after which temper it, and it is ready for use.

The gag should be made of what is called five-eighths half-round iron, and the surface of the metal should be so arranged as to present when in use the rounded surfaces to the palate and tongue of the horse.

Before using the gag, turn the horse round in his stall. The operator places himself on the right side of the patient, with his back towards its shoulder, then takes hold of the halter with his left hand to steady the head better, at the same time holding the instrument in his right hand; he then gently insinuates the same into the side of the mouth, gradually forcing the jaws asunder by bringing the handle of the gag into a perpendicular position; the tongue is then gently but firmly secured as previously directed, the ball is given, and the iron is immediately withdrawn. Should the animal operated upon manifest alarm, which is frequently the case unless the operation be easily and steadily performed, the operator should take time, and have recourse to gentleness and patience. Sometimes it is necessary to place a twitch upon the nose.

ADMINISTRATION OF MEDICINES IN POWDER.—The medicines which are given to the horse in a state of powder are not

numerous. The following are the principal, viz.:—sulphur, powder of nux vomica, strychnia, mercurius, sulphate of iron, and sulphate of copper.

Sulphur, nux vomica, strychnia, and mercurius, are powders which may be administered as follows:—The requisite dose of the drug is first mixed with a small portion of flour; the whole is then poured into a large table spoon, and a few drops of water are added; and by the aid of a bone spatula, or a small flat piece of clean wood, the mass is made into a paste of moderate consistency. The operator then advances to the patient, while an assistant steadies the head; he then gently draws the tongue out of the mouth, or he depresses the left corner of the lower lip, and wipes the contents of the spoon upon it. The animal speedily licks up the whole.

Another mode of administering a powdered drug, is by triturating the quantity prescribed with loaf sugar, and then mixing it with the animal's corn, or in a mash of bran. This however, is not always to be depended upon, as the patient may refuse to eat it.

Accidents and Sudden Illness to Horses.—In cases of accident, or where illness suddenly occurs, everything may be said to depend upon the coolness and the common sense of those in attendance. Numbers of individuals, when placed amid circumstances of this nature, become so confused as to be incapable of affording the least assistance. Not unfrequently people of this kind run to and fro, as though utterly bereft of reason; or if they do anything to regulate the existing disorder, they are almost certain to do the very reverse of what they ought to do. People of this character should never leave home, except under the immediate care of that maternal watchfulness so essentially necessary to the protection of the helpless.

A common accident is that of horses falling or becoming thrown, either when being ridden or driven. If such an accident occurs to the animal when attached to a vehicle, a very common error on the part of those in attendance is that of cutting the harness to pieces. This we will venture to assert is not necessary upon an occasion of this kind (if ever) one time in a thousand. When a horse suddenly finds himself in a novel and alarming position, it is natural that he should struggle and fight to release himself; now, instead of the attendants proceeding to cut and destroy the harness, let them use their power to pacify the animal. The first thing to do in the generality of such cases is to secure the head of the horse. An attendant must place himself upon the neck, and hold down the head by main force, then, by speaking firmly but kindly to the animal, he will soon be pacified. A second person may then deliberately proceed to undo every buckle which holds the various straps together. The secret of success for the most part consists in holding down the head, when, with very little trouble, the poor animal may be speedily liberated.

Colic.—One of the most common forms of sudden disease to which the horse is liable is colic. In a general way it is anything but a dangerous disease, but the violence of the animal, particularly in the more severe forms of the malady, will terrify an inexperienced owner or attendant, who not unfrequently wastes more time and labour in running from place to place in search of relief to the patient, than, with a little foresight and the aid of common things which are usually at hand, would suffice to cure the disease. As usual in matters of sudden emergency, people often do that which ought to remain undone. Not unfrequently a crowd of gaping idlers collect, many of whom will doubtless consider themselves qualified

to give advice. Some may recommend the horse to have gin given to him; others gin and pepper; others a mixture of gin, pepper, onions, and hot ale; others old urine; and very likely all of them to bleed the animal from the veins of the neck, or the roof of the mouth.

I was called to a patient some time ago, affected in the manner described; and when I arrived, I found two individuals engaged in abstracting blood from the animal; two others in giving a drench of hot ale and pepper; a fifth, in giving an injection of soap and water; and several in rubbing the body and limbs of the patient with wisps of straw; while a number of others were engaged in laughing, shouting, making sport, and occasionally in issuing fresh instructions of that nature which the wisdom of the multitude deemed necessary.

What the attendant should do in the first instance is, if practicable, to remove the patient at once into a roomy place, well provided with clean straw; when, if proper remedies for the disease are not at hand, or cannot readily be obtained, he can easily procure a clean porter bottle, which he may fill with hot water and administer to the horse forthwith, using the water as hot as it can well be borne without fear of scalding the mouth. By this simple practice the disease may in all probability be checked, and the patient none the worse in the end.

Every driver of a team, before starting a long journey, should have a small box fitted to the waggon, which box should contain the following articles, viz.:—

Small Drench Horn.
Tincture of Aconite, 1 ... 2 ounces.*
Tincture Nux Vomica, 1 ... 2 ounces.

For a knowledge of the value of these medicines, and the

* The Aconite for veterinary use should be prepared from the root of the plant

proper mode of dispensing them, see article Colic, contained in the section which treats upon the disease of the digestive organs.

In like manner every coachman, when going with his horses and carriage a tour of six or eight weeks' duration, should be provided with the following articles, all so placed and arranged, that in case of necessity they can be got to at a moment's notice:—

Small Drench Horn.

Tincture Aconite, 1.....	2 oz.	Tinct. of Arsenicum, 2...	2 oz.
Tinct. Nux Vomica, 1...	2 oz.	Tinct. Bryonia, 1.....	2 oz.
Tinct. of Camphor	2 oz.	Tinct. Arnica, ...	8 oz.
Tinct. of Belladonna, ...	2 oz.	Aromatic Ammonia.....	8 oz.

ALSO,

Woollen Bandages	4	Small Hammer	1
Linen Bandages..... ..	4	Small Pincers.....	1
Large Sponge.....	1	Patent Horse Sandals	2
Picker.....	1	Packet of Tow	1
Drawing Knives (small and large)	2	Empty Bottles	2

The whole of the articles enumerated above will not in the aggregate weigh over six pounds; so that if they should not be wanted, the trouble of taking them from place to place cannot prove a very burdensome affair.

POULTICES.—Poultices are well known applications to parts locally diseased, or where disease of a systemic kind locally develops itself. A poultice in its effects is merely a long continued fomentation. If applied to a part which is hard, tense, and painful, its direct action is to soften the tissues, and thus relax tension, and relieve pain.

The articles in common use for poultices are bran, linseed meal, turnips, and oatmeal. It is a favourite practice with

numbers to collect together various herbs, and chop them into a state of pulp, then to boil the pulp, and apply the same while hot as a poultice. A poultice of this kind, however, possesses no advantage over any one of the articles named above. The virtues of a poultice are its warmth and moisture, so that whatever material will continue to impart these essentials the longest, is the best for a poultice. In selecting materials for this purpose, those articles should be preferred which readily imbibe moisture and heat, and which are clean, light, and pliable. Bran and turnips possess these qualities to a degree which render them upon the whole perhaps the most suitable articles for poultices. Linseed meal, if used alone, when made wet, becomes glutinous, or like bird-lime; and unless it is made very wet, it dries, hardens, and presses upon the part diseased, and gives acute pain to the animal. If bran and linseed meal be mixed together in the proportion of three parts of the former to one of the latter, the combination forms an excellent material for poultices. Bran, if made into a poultice, unless grease of some kind be mixed with it, speedily becomes cool and dry; the addition, however, of a small portion of lard counteracts this to some extent, and also prevents the bran from passing into a sour state.

Bran and turnips, if mixed together, make a very good poultice. The turnips should be boiled to a pulp, and while hot, along with the liquor, should be poured upon the bran, and the whole should be thoroughly mixed together; and when so far reduced in temperature as not to scald the animal, the mass should be applied to the part diseased.

The effects on many occasions produced by poulticing are excellent and well marked; and if individuals, having diseased horses, would at times exert their skill in contriving modes to apply them when necessary, they would be found far more generally useful than at present.

Poultices are beneficial to use as local applications in strangles and sore throat, to tumours situated within the submaxillary space, and in inflammation of the parotid gland; also in diseases and injuries of the feet, in broken knees, and to injuries of almost every kind and degree.

Sometimes when applying poultices to the limbs and feet, it is proper to combine with them a substance to act as a corrective. This is occasionally required in grease, running thrushes, canker, and even to broken knees. Yeast and powdered charcoal are articles of this kind. When yeast is required, it should be prepared as follows:—Measure four or five spoonfuls of yeast into a basin, then add a similar measure of flour, and a little tepid water; stir the contents of the basin well together; and when fermentation begins, pour the mass to the poultice, the temperature of which should be low, otherwise the heat of the latter will destroy the fermenting power of the yeast. When charcoal is used, all that is required is simply to mix it with the poultice at any temperature the operator may choose.

In using poultices, attend to the following essentials:—

I.—Have them bulky; otherwise the moisture and the high temperature of the mass are speedily gone, without the patient receiving the least benefit from their application.

II.—To produce their full effect, poultices should be changed every six or eight hours.

III.—Poultices should be applied and secured to the part diseased by means of a thick, substantial medium. Leather boots are made for this purpose, when poultices are required to the feet; but an excellent medium to secure a poultice to

any part of a limb above the feet, is the leg of a strong woollen stocking. This in fact is the best medium we can procure to apply a poultice to the hock and knee joints; while for the head, throat, and neck, strong canvass will answer the required purpose.

IV.—In fixing poultices, avoid tying them tight, particularly with straps and ties that are narrow and sharp; as these articles, when fixed tight to the limbs, press into the skin and sub-tissues, and by doing so cause the structures both above and below the poultice to swell considerably.

V.—When a poultice is necessary, it should always be applied so as to insure its substance being in *direct* or *immediate* contact with the skin.

It is a common practice to put the poultice into a canvass bag, and secure the latter and its contents to the part diseased. This is a bad method, and is apt to inflict more pain and disturbance by undue pressure, than is counteracted by the good which the poultice may do.

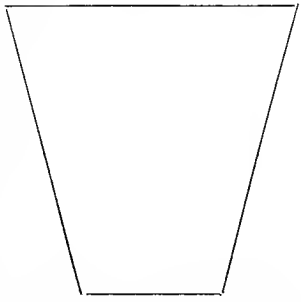
To secure a poultice properly to the knees or the hocks, proceed as follows:—First place the stocking leg to the part requiring the poultice, by drawing it over the foot; then bandage the limb from the foot or fetlock joint up to the lower part of the stocking; then place the poultice within the stocking, and work its substance thoroughly and evenly to every part requiring its soothing influence; then securely close the open mouth of the poultice bag by means of a broad soft tie: the operation is then complete.

The application of the bandage has a two-fold effect: it prevents the poultice from slipping down or falling out at the

bottom; and it also prevents the limb from swelling. The bandage should be applied wet, otherwise the pressure of the poultice may displace it.

POULTICE TO THE NECK.—To fix a poultice to the neck is a matter of some difficulty, so that a few plain directions regarding the proper way to do it, may prove of advantage.

Procure a thick strong piece of canvass (a thick piece of woollen cloth would be preferable from its softness) which cut to the shape of the annexed diagram.



The size of the cloth for a large sized horse, will require to be as follows. Length of cloth, 24 inches; width of ditto at the broad end 18 inches; width at the narrow end, 12 or 14 inches. A broad piece of tape will also be required to pass from each side of the broad end, and one from each side of the narrow end of the poultice cloth. The tapes at the broad end, are to tie at the top of the neck, while the lower ones are to tie over the bones of the nose.

Let us see what advantages are to be obtained by having a cloth of the above form. Its broad end will pass over the neck, and the tapes can be secured behind the ears; the sides of the cloth will pass down, one on each side of the cheeks, leaving the eyes clear and free from annoyance, while the narrow end will pass from under the jaws and over the nose, where its tapes can be readily secured, as well as allow of an additional tie to pass from the tapes upon the nose up the centre of the forehead to the tapes behind the ears. This additional tie will materially aid in supporting the poultice, and in maintaining the poultice cloth in its proper position.

Without further aid and security to the poultice, however, the means as above described will not prove adequate. To apply the poultice, and afterwards fix it to the neck, proceed as follows:—

Turn the patient round in the stall, remove the head collar, then, by the aid of an assistant, place the poultice cloth in position; tie it closely and securely at its lower end, and lightly at its upper end behind the ears; then, with the hand, or by the aid of a large wooden spoon, place the poultice within the poultice canvass, between the neck and the jaws; and when sufficient is added, gather the sides of the poultice canvass into folds, and by means of a large curved needle, and some broad tape, sew the folds of one side to those of the other by passing the needle and tape from one side to the other over the neck; then take a common halter, having a throat strap attached, put the halter upon the head of the animal, draw it close to the poultice cloth at its lower end, and tie a knot around the noose of the halter; then buckle the throat strap well up, so as to afford firm support to the poultice at the throat. By tying a knot close to the noose of the halter, the poultice will be upheld to the jaws, and its escape prevented from the bottom of the canvass.

Should the halter and its neck strap be insufficient to hold the poultice close to the neck and jaws, (and when it is necessary to apply a poultice to these parts, it will not prove of service unless so secured), pass a long, broad, woollen bandage several times around the neck and the poultice cloth, and secure its ends at the back of the ears. By this means the poultice will be held firmly and effectually to the surface of the parts diseased; and in consequece of the additional covering, the heat and the moisture of the mass within will be longer retained, and the efficiency of the remedy ensured.

POULTICES TO THE ABDOMEN.—To apply a poultice to the abdomen, or to any part of it, another arrangement of canvass or cloth than the one described will be necessary. A poultice cloth for this purpose should be made of a form and size to correspond to the body of the animal. Broad straps should pass from underneath the body and buckle along the top of the back, similar in form to an article called the Body Sacking, an engraving of which is appended to the article treating upon inflammation of the bowels.

FOMENTATIONS.—Fomentations, so far as they act upon the living tissues, are like poultices in almost every respect. If fomentations are applied to surfaces which are inflamed, they soften the tension and hardness of the structurs involved. Like poultices, their virtues consist in affording a continued supply of heat and moisture.

Many individuals consider fomentations to possess little or no virtue, unless medicated with various herbs and plants. I believe that no advantage whatever occurs from the use of such fluids beyond what is afforded by their heat and moisture.

The best fomentation to wounds and injuries of delicate tissues and structures, is steam. I have proved this in numerous instances. If the reader will procure my "Principles and Practice of Veterinary Medicine and Surgery," and read from pages 130 to 133, he will obtain important information upon the matter, and also see a woodcut representing an apparatus to use for the generation and application of steam.*

For a diseased part to receive the full benefit of a warm fomentation, it is necessary that the operation should be continued from one to two hours at a time, the water all the while being maintained at a high temperature.

* London. John Churchill, New Burlington Street, W.

FOMENTATIONS OF LIMBS.—If the limb of a horse requires to be fomented, the best plan to pursue is to place it in a large tub; but before doing so, fold the limb with thick woollen cloths; then, by means sf a large sponge, or a large pitcher filled with water at the proper temperature, the contents of one or both are to be slowly poured or forced upon the woollen wrappers. As the water cools in the tub, more can be brought at a proper heat and mixed with it. When the process has been continued so long as may be deemed necessary for the time being, the limb is to be taken out of the tub, the wet cloths are to be removed, and dry ones applied in lieu of them.

To parts which have but newly received an injury, such as a severe kick or bruise, or contusion of any kind, the free application of water at a high temperature will generally prove one of the best sedatives which can be resorted to. The pain in such cases is frequently relieved by it at once.

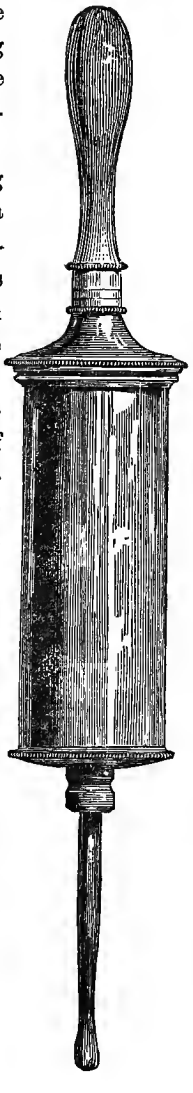
FOMENTATIONS TO THE NECK.—Fomentations applied to the neck at its junction with the head frequently prove of essential service in catarrhal sore throat, strangles, and in other maladies of an analogous nature.

The proper way to apply them is as follows:—First procure a woollen bandage, or a piece of flannel five inches wide and twenty-four in length, and consisting of several folds in thickness; dip the folded flannel into water at a temperature of 118° or 120° Fahrenheit, wring out the loose fluid, and apply the flannel immediately to the part diseased, and secure it to the neck by means of a dry flannel bandage folded round and round, by passing it under the throat and over the top of the neck. The hollow which exists on each side of the neck may be easily filled up with rolls of flannel (one roll placed on each side), applied either dry or saturated with hot water.

Fomentations of this kind produce all the effects of a poultice, and they admit of being far more readily applied. They may also be applied in association with mustard embrocations.

INJECTIONS.—Injections consist in forcing a fluid into the rectum either by means of a hollow tube having a common bladder attached to one end, or by what is called Reid's Patent Enema Pump, or by the common syringe, such as the reader will perceive figured in the annexed engraving.

Fig. 16.



In veterinary practice, Injections are resorted to in cases of colic, inflammation of the bowels, constipation, spasm of the bladder, and many other diseases of a kind to be treated upon hereafter. Injections, to produce their full effect, should be given warm, —hot, in fact, but not of a temperature to scald the patient. I invariably use them so myself. An injection of mere tepid water, is of no service beyond softening any hardened dung which may be impacted within the rectum; but if the contents of the rectum be first cleared out, then an injection of soap and water (the latter at a high temperature) may be given with advantage, as it excites a change throughout the system. In many cases of colic I have known hot injections to cure the disease almost at once.

The administration of a hot injection

should not be entrusted to any rough, heavy-handed fellow, otherwise a serious injury may be inflicted upon the patient. It is an operation which requires either a nice feeling within the hand of the operator, or the careful use of a thermometer. The bowel will receive an injection at a temperature of 116° to 118° Fahrenheit, without fear of injury being inflicted: a higher temperature than this would not be unattended with risk to the animal.

BLISTERS.—Blisters are applications of a common character. Many grooms talk largely about blistering, bleeding, and purging: they speak, in fact, as though the indiscriminate practice of the three constituted the whole art and science of veterinary practice.

Blistering horses, although common, is not so much in vogue as it was some years ago. It is supposed by numbers to possess virtues which it does not. One effectual service a blister performs, is that of placing the animal operated upon completely out of use; and by so doing, time and rest are afforded, and marvellous benefits frequently occur in consequence, which are all attributed to the direct action of the blister. Formerly it was the practice to fire and blister the limbs of nearly every young horse in the kingdom. These operations were deemed great strengtheners of the limbs; happily for humanity, however, these practices, unless resorted to in cases of disease, are now abandonded.

Blisters are sometimes of great value if applied to the sides of the chest in pneumonia; also to the part during the formation of abscess within the sub-maxillary space; also in tracheitis and in bronchitis.

Mustard is the best substance to apply to the sides of the chest, to the course of the trachea, and to the neck, in bronchial,

pleuritic, and pneumonic diseases. Cantharides act too violently in these diseases. Mustard, if powerful and genuine, and if assiduously applied, produces effects equally beneficial, without the virulent effects of the former. Mustard also possesses these advantages over blisters containing cantharides: its effects can be regulated just as the operator may desire; it also passes off speedily, and leaves no permanent blemish upon the skin; and it does not excite those dangerous consequences within the animal system which are but too common from the use of cantharides. It is the best to apply a cantharides blister to a part where the disease is limited in its extent of surface, and where, comparatively speaking, it is superficial; as, for example, in the formation of purulent abscesses between the lower jaws, to a splint upon the bones of the leg, to a sprain of the flexor tendons, or to a curb. But when the inflammation is very deeply situate, and extends over and amongst tissues having an extensive surface, as in the lungs and the pleura, and when the avoidance of systemic disturbance is regarded (as it ever should be) as an evil to be avoided, mustard is without doubt one of the best excitants and counter irritants which we possess for the purpose.

To produce a smart effect with mustard, it requires to be applied two or three times in quick sucession. Its action may be increased if a small quantity of common hartshorn, or turpentine, or strong vinegar, be mixed along with it.

To best describe the manner of its use, let the reader suppose a horse to be affected with pleuritis, and where it is necessary to apply it as a counter irritant to the sides. The proper way to proceed is as follows:—First procure half a pound at least of genuine mustard (not a mixture of flour and turmeric), which pour into a large basin, add to it five or six ounces of hot water, and stir the whole thoroughly together

so as to form a thick kind of paste; then add to the mass from one to two ounces by measure of spirits of hartshorn, and as much more hot water as will suffice to reduce the paste-like state of the mustard to the consistence of mustard usually taken with roast beef; then procure a large sponge, which dip in hot water, and with it rapidly and thoroughly wet the hair on one or both sides of the chest, as the case may require, then freely and vigorously rub the mustard upon the parts made wet. Should the operator find the mustard to work dry, he must wet his hands in hot water, and apply a portion of the liquid to the surface of the hair, and then go on as before. The operation, if performed upon both sides of the chest, should occupy at least from fifteen to twenty-five minutes. Should the mustard fail to produce the desired result, which it generally does upon the first application, repeat the process a second or even a third time, at intervals of about two hours. The second application will not require so much mustard, as the hair will already be saturated with it, and the skin excited and more sensitive to its effects.

When the sides become sore, and the swelling of the skin excessive, or to the extent desired, the further application of the irritant should be withheld, otherwise the tissues of the part may slough and leave a raw surface, and ultimately a blemish which may be permanent. By carefully noting the effects of the mustard, and by applying it at proper intervals, with or without the hartshorn, and in greater or lesser quantities according to the state and requirements of the case, the effects of the medicament can be easily regulated with the utmost nicety.

In cases where the mustard has been regularly applied, and where the article is known to be genuine and powerful, and yet where little or no effect results from its application, it is

generally to be regarded as a bad omen to the patient; while, on the contrary, where the irritant acts quickly, and produces an extensive swelling, the issue may be looked upon as likely to be favourable.

JAMES'S BLISTERING OINTMENT.—I am frequently questioned respecting a blistering ointment sold by the generality of chemists, and called "James's Blister." I have never used this ointment to cases of my own, but from the report of others who have tried it, I am of opinion that it is a good excitant. It is spoken of in favourable terms by veterinary surgeons who are personal friends of mine, and said by them to produce a smart effect without leaving any permanent blemish to the part it may be applied.

The common blistering ointment generally sold by the chemists, frequently contains corrosive sublimate and other irritants of a most destructive nature. Perhaps the mildness of the above named blistering ointment arises from an entire absence within it of all such drugs.

FIRING.—The application of the actual cautery for the cure of disease is not only a very ancient remedy, but it is also one of almost universal reputation. Blaine tells us that in India the hot iron is applied to the skin of the abdomen of the human being for the cure of schirrosity of the liver. The same authority also informs us that the Arabs fire the joints of their young colts to strengthen them.

The actual cautery was used by the surgeons in the time of Hippocrates; and at this day we find one of the ablest writers on surgery treating upon it as follows:—"The actual cautery," he states, "is certainly a very efficient, and it is very far from being the most painful, manner of effecting counter irritation.

on the contrary, its effects are speedy, and not attended with very much suffering."*

In veterinary practice, Firing is resorted to for the cure of spavin, splint, curb, sprains of the tendons, side-bone, ring-bone, debility of the limbs arising from excessive labour, and other affections and maladies of an analogous character.

It may prove advantageous to lay before the reader a concise explanation of what I consider to be the effect and the *modus operandi* of this agent.

The effects of the actual cautery are of a threefold nature, and of a character not difficult either to describe or understand. The first effect which succeeds upon the application of the hot iron (the immediate effect) consists in burning the skin Its second (mediate) effect is that of inducing inflammation within the tissues cauterised. Its third (remote) effect consists in permanently thickening the skin, and to a great extent destroying its elasticity. *The peculiar nature of the effects produced by the inflammatory process, thus excited and established, will depend upon the peculiar nature of the tissues cauterised.*

When inflammation from the application of the actual cautery is produced within the tissues composing bone, or immediately contiguous thereto, the result is of a nature entirely different from the effects produced within the muscular or fibrous tissues from the operation of a similar cause.

Take a case of spavin, as an example of the beneficial influence which the actual cautery will occasionally exert in the cure of disease affecting the bony tissues of the body.

Bone Spavin consists of inflammation and ulceration of the articulatory surfaces of the small bones of the hock; and the

* *The Surgeon's Vade Mecum.* By R. DRUITT, (p. 636). Seventh edition. London: John Churchill.

only mode by which the disease can be cured (should the ulcerative stage supervene) is that of ossification of these bones. This process of ossification Nature labours to accomplish in the following manner:—The inflammatory action of the disease stimulates the nutritive vessels of the bones; a greater abundance of bony matter is secreted and deposited; and in time the joint may become what is called *anchylosed*, and the lameness in consequence sometimes disappears. This process, however, if left entirely alone, is tedious and uncertain in its results; and even when successful the animal may undergo years of slow torture before recovery is fully established. Now, firing the hocks under the conditions named, aids the natural powers to complete the ossific process more speedily and more effectually. The firing does not effect anything specifically different from what the natural efforts of the diseased structures are striving to effect; they are, in fact, so far as they go, of a nature precisely similar.

Firing the spavin increases the inflammation already existing within the joint; but this inflammation being new, and dependent upon a temporary cause, it speedily subsides; but if, during its existence, it be sufficiently vigorous not only to entirely supplant the old malady but also to fully complete the ossific process already established, the patient speedily becomes what in ordinary language is termed "cured of the spavin," and the firing to have fully answered the purpose intended.

In like manner we are to explain the action of the actual cautery when applied to the cure of ring-bone, side-bone, splints, and curbs: its effects, however, upon the softer tissues, as when applied to legs debilitated from over exhaustion, are of a different character. In instances of this nature the limbs, if benefitted by the process (which they generally are), the improvement arises from a twofold source:—first, from the rest

enjoyed by the animal; and secondly, from the increased vascular action set up within tissues previously enfeebled. Rest alone has been known to effect a similar result; but it neither does it so speedily nor so effectually as when associated with firing.

Direction of the Lines.—The direction in which the lines should be cauterized upon the skin is another matter for consideration. It is at all times desirable that the animal should be as little blemished as possible, especially if we can avoid doing so without performing the operation less effectually. As a general rule, the lines should be scored across the hair. By this means the hair, if not destroyed in its growth from the operation, will grow over the lines, and thus hide them as far as practicable.

Side-bones and ring-bones should be fired in lines parallel to the top of the hoof; a sprained flexor tendon in lines across the limb; while in spavin (if this rule be adhered to) the operator will require to vary the lines according to the variation in the direction of the hair. The rule now laid down cannot, however, be adhered to upon every occasion; as sometimes in firing it is the best to burn one deep line and leave it to heal, in which case it is generally necessary to cut the line to the utmost length it can be taken over the part affected.

Depth of the Lines.—With regard to the depth that the lines should be burnt, no positive rule can be laid down. Some time ago this question was debated by veterinary surgeons with great warmth: one party contending that very deep firing was alone worthy of consideration and practice; while a second party contended that very deep lesions were barbarous and unnecessary, and advocated the lines to be of moderate depth. It is a question, however, which cannot be settled exclusively

in favour of either one party or the other. Sometimes it is necessary to fire deeply, and sometimes not. The extent to which the lines should be taken will, in numerous instances, have to be governed by the breed of the patient, the thickness of the skin, and the nature and state of the disease.

Many writers, whose pseudo humanity is more conspicuous than their common sense, condemn the use of the actual cautery not only as cruel in the extreme, but as unnecessary upon all occasions. I have found it, however, when rightly applied to cases of the right kind, to be an agent of great value. I have found it valuable in spavin, and curb; in sprains of the metacarpal ligament; in splint; in cases of debility of the limbs; and in specific ophthalmia. It is a remedy, however, of limited application. It has been, and by numbers is yet, very greatly abused. It is of no avail to fire the hocks for thorough pin or bog spavin; nor the fetlock joints for wind-galls; nor the spine in cases of tetanus. On the contrary, use the remedy to cases appropriate, and I have no fear of it being either decried on the score of inhumanity, or, on the other hand, lauded to an undue extent.

MATTERS TO OBSERVE RELATING TO THE OPERATION OF FIRING.—It is necessary to remove the hair from the part where the cautery is to be applied. Youatt recommends the limb to be shaved, but this is unnecessary. If the hair be clipped away close to the skin, and the skin afterwards carefully cleansed, it is all that is required.

Iron.—The thickness of the burning edge of the iron should vary according to the breed of the patient to be operated upon, and the nature of the disease; curbs and splints, when it is necessary to fire them, require a fine-edged iron: while ring bones and side bones require the iron to be thick upon its

burning edge. The iron should always be thick at the back; this enables it to be heated to a higher temperature, and afterwards to retain its heat for a longer period. The iron should be of a brisk red heat, and its surface free from scales or dirt of any kind. Before applying the instrument it is best to use a fine file to its sides and edge.

BLISTERING.—When the application of a blister is determined upon in addition to the firing, as a general rule, apply the blister immediately afterwards. Many writers condemn this practice as wanton and useless cruelty. A slight reflection, however, will convince any one that, so far as cruelty is concerned, it amounts in the end to the same thing, no matter whether the patient be blistered at the time or in a day or two afterwards. To argue on the contrary is about as wise as the man whose dog had an enormous long tail, and which it was deemed necessary to shorten; but the owner would not allow it to be shortened to the full extent at once, on the plea of cruelty, —he had a little removed daily, until the requisite shortness was obtained.

A very excellent blister can be obtained from the application of tar to the fired surface. For a knowledge of this fact I am indebted to that excellent practitioner, my friend Mr. John Lawson, veterinary surgeon, of Manchester.

The tar should be applied in every way similar to what blistering ointment is usually applied. The patient should afterwards be tied up to the rack, to prevent him from biting the part irritated. It is stated that horses blistered with James's Blistering Ointment will not gnaw the part blistered; our observations however lead us to assert the contrary.

As a general rule never fire and blister more than two limbs out of the four at once. It is dangerous to do so.

AFTER TREATMENT.—The after treatment is simple enough. The third day after the operation, lightly scrape the part fired and blistered with the back edge of an old table knife; then lightly wash the sore with warm water, soap, and a soft sponge. The washing to be repeated every third or fourth day for four or five times in succession, while every day, dressings of lard or neats-foot oil may be applied to soften the skin, and aid the escape of any purulent discharge which may be present.

It is seldom that the full benefit derived from the actual cautery is observed at once. Its operation is slow. The animal operated upon should always rest, or run at grass, for at least three months afterwards.

SETONS AND ROWELS.—Setons and rowels are well known remedies. Like a blister, or the application of the actual cautery, they excite the living parts to which they may be applied, into active inflammation.

Both setons and rowels, however, are limited in their action, being in all cases confined in their effects to the tissues they may be placed in.

Rowels are seldom or ever resorted to now-a-days by veterinary surgeons. Ignorant people have faith in their efficacy as of old.

Setons, although of a precisely similar nature in their effects, yet, from their greater readiness of application, and the greater extent of surface over which they can be made to act, to some extent still retain a place in veterinary practice.

Setons are useful occasionally in cases of Quittor; also to apply along the course of the trachea in certain forms of chronic cough; also to apply along the back on each side of the spine, in cases of irritation of the spine; and also in poll evil, and other forms of deep seated abscess. "In inflammations

of extensive organs," says Mr. Youatt, "setons afford only feeble aid: their action is too circumscribed,"—an opinion with which I entirely coincide.

Formerly setons were lauded as a remedy for spavin: after trying them, however, in over thirty cases of the kind, I cannot report in their favour.

To cause a seton to produce its full effects, it is necessary that it should be moved to and fro at least once or twice daily.

When a seton is placed where it is intended for some time to remain, do not secure the ends of the tape by tying them together; it is better to secure them to small pieces of wood. When the ends are tied, the seton forms a closed loop, which may accidentally become fixed to a nail or a hook, and the seton in consequence be torn out of its matrix.

Tincture of calendula, or tincture of arnica, may be applied to the seton occasionally as a dressing.

PURGATIVES.—A purgative is at times a remedy of great value. They are necessary to procure condition, and to aid in retaining it when procured. They act by rapidly ridding the system of much superfluous matter, when the body of the animal is gross and foul. They are valuable in cases of acute grease, in cases of worms, and in numerous instances of a kind in which, despite of all ordinary dieting, the animal is spiritless and unthrifty. In cases of this nature we have known a purgative to produce a change in the general health of the animal little short of the marvellous.

No class of men are better acquainted with the value of gentle laxatives and purgatives than horse dealers. It is by constantly grooming their animals, by a diet skilfully managed, by well regulated exercise, and by the judicious administration of purgatives, that they are enabled to produce such

extraordinary changes in the general appearance of a horse in so short a period of time.

In acute systemic maladies, and in systemic maladies of a low typhoid nature, the administration of purgatives will generally prove injurious to the patient. They are recommended by every writer as indispensable in cases of tetanus. I have not, however, found them necessary in this disease. The constipated state of the bowels, so common at the onset of the malady, can be more readily overcome by means of injections of warm water and oily emollients, than by purgatives, letting alone the absence of their irritating and debilitating effects. In the generality of tetanic cases, I condemn their use entirely.

For particulars relating to the best kind of purgative for the horse, for the proper mode of preparing the animal before a purgative is administered, and for instructions relating to the proper treatment of the animal afterwards, the reader must turn to pages 75, 76, and 77.

DIURETICS.—Diuretics are favourite remedies with grooms and stablemen. Formerly a diuretic was given to a horse every Saturday night or Sunday morning; much of this, however, is now happily abandoned, but the practice yet remains in many large horse establishments. I am at a loss to know their use, except to make drug bills. The majority of respectable veterinary surgeons have utterly discarded their administration to healthy horses years ago.

Horses subject to severe labour necessarily perspire much, particularly during the prevalence of hot weather, and as a natural consequence, they secrete less fluid urine; and diuretics are given under the foolish impression of rectifying this. The animal drugged without a doubt urinates more in quantity in

consequence, but such additional quantity consists merely of a greater abundance of water. The solids of the urine, or those constituents which form the essential peculiarities of the secretion, are not in the least altered either in quantity or quality by the diuretic agent; all that it does accomplish is to cause the blood to be drained to an undue, perhaps to an injurious, extent of its watery constituents. Diuretics to horses in good health I condemn entirely, not only as useless, but as pernicious to the organism.

To those, however, who desire a more abundant secretion of urine from their horses, they must place rock salt in their racks or mangers. Horses are fond of salt, and they frequently lick it with avidity when so placed as to allow them to take it when they choose.

Salt is highly beneficial to horses in many respects, but it must not be forced upon them. When allowed to take it of themselves, they will generally lick sufficient to excite that degree of thirst which causes them to drink the amount of water which helps to maintain a healthy state of the urinary organs.

Diuretics are occasionally useful if given to horses affected with chronic lymphites—with swollen limbs arising either from debility or from the system of the animal being over-loaded with watery fluids.

BLEEDING.—Bleeding is a practice we suppose to be coeval, or nearly so, with the human race. For centuries it was regarded as one of the great panaceas for almost every malady to which either bipeds or quadrupeds were subject, and until within the last few years its practice was all but universal amongst veterinary surgeons.

Until within a very recent period it was deemed necessary to

bleed horses in regular work twice a year, while a diuretic ball, (or when it was determined "to do it mild," a ball half diuretic and half cordial was substituted), was given every Saturday night; and this constituted a portion of the regular treatment of the generality of horses, no matter whether they were diseased at the time or not. To those diseased the balls were given to cure them, while to those in health they were in like manner given to prevent the horses from being invaded with disease.

Of late, however, the practice of bleeding has fallen, and justly so, into disrepute. For our own part, for a period of three years at a time, we have not found it necessary to bleed a single patient, although diseases of the most violent nature in one form or other were constantly under treatment. It is very rarely indeed that we abstract blood. It may, on some occasions, be found of benefit, particularly in severe local inflammation, as in laminitis, and in acute inflammation of the navicular joint; but we more than question its utility in such inflammatory diseases as pneumonia or pleuritis. Why the abstraction of blood should prove beneficial in one case and not in the other is, we think, obvious. In circumscribed local inflammation, the blood abstracted is withdrawn *directly* from the tissues inflamed, as in laminitis for example, and a far less quantity suffices to make a *direct* impression upon the disease; while in such a disease as pneumonia, before any impression can be made upon the part inflamed, the blood abstracted must be greater in quantity, because the abnormal quantity of blood which exists in the inflamed organ can only be lessened by an *indirect* process, *i.e.* by abstracting blood from the system at large; and this we find to injure the system and weaken its vital power, without conferring benefit *locally equivalent to the injury inflicted upon the organism.* In cases of this nature

especial attention should be paid to the *economising of vital force;* and this can only be done by giving it every aid and support within our power. What shall we say then to directions such as the following? "Under ordinary circumstances," says Mr. Percival, "the abstraction of a gallon of blood is reckoned a moderate bleeding. Under pressing disease I occasionally draw three gallons: I have heard of four being taken."* We have no hesitation in saying that directions more atrociously destructive to animal life could not well be exceeded, unless they were such as to encompass the immediate death of the animal. We used at one time to bleed frequently: but never during the most sanguinary days did we venture to abstract from any poor animal three gallons of the vital fluid at one time.

* "Percival's Hippopathology," 2nd edit., vol. 1., p. 95.

Section II.

ON THE SKIN AND ITS DISEASES.

SCARLET FEVER.
CHAPPED HEELS.
SURFEIT.
BULBOUS PBURIGO.
SORENESS OF THE SKIN.
RINGWORM.
MANGE.
GREASE.
ITCHING OF THE EXTREMITIES.
WARBLES.
ANGLEBERRIES.
HAIR CYSTS.

PRELIMINARY REMARKS.

The uses of the skin are numerous. It is the outward vesture of every tissue, the aggregate of which constitutes the organism of the horse.

It is the matrix of the hair, a growth which adds beauty to the animal, and forms an important defence to the delicate structures of the skin, and also to other and more deeply situated organs of the body, not only from the varying temperature of climate, but also from the operation of innumerable agents of an external character, which tend more or less to disturb the economy of the system.

It is also an extensively secreting organ: of this the reader may judge when I inform him upon the authority of our most eminent physiologists, that the quantity of invisible perspiration which daily arises from its extensive surface is equal in

weight to the solid and fluid substances excreted by the bowels and the kidneys in a similar period of time.

The skin is subject to a number of diseases, one or two of which are of such a nature as at times to prove destructive to the life of the horse. The generality of its maladies, however, are not of so injurious a character.

From the anatomical and physiological relations of the skin to some of the principal organs of life, (as the respiratory, digestive, and urinary organs), it manifests great sympathy when they are diseased, especially when they are affected with chronic maladies, and maladies of a malignant character.

In summer, horses which are used for the general purposes of society perspire more copiously than during the colder months of the year; and as a natural consequence, the kidneys secrete a less amount of fluid, a fact which should be borne in mind by those who own and groom horses, and who are so frequently desirous of administering to their animals diuretic medicines to regulate what is considered by them deficiency of urinary secretion.

The skin of the horse does not suffer from such a numerous class of diseases as what are known to attack the human skin. Probably this exemption may arise from the following causes:— 1st, its free exposure, at almost all times and seasons, to the full influence of the atmosphere; 2nd, from its being more frequently cleansed, and subject to friction with combs, wisps, brushes, and cloths; and lastly, from the more simple life of the animal with regard to its diet and general hygienic treatment.

But although the skin of the horse does not manifest such a numerous class of maladies, yet, from the intimate relations we have already named between it and the internal viscera, a similar law of sympathy prevails with one as with the other.

This law, to use the language of Erasmus Wilson, resolves itself into three forms of expression:—1. *That disease affecting a part of a membrane is liable to spread to the whole.* 2. *That disease of the mucous membrane may spread to the skin, and* vice versa. 3. *That disease of a part of a membrane may become translated to a distant part of the skin, and* vice versa.

An intimate knowledge of the above law is of the highest importance in the treatment of those diseases which are peculiar to the skin and to the mucous membranes; especially those of a chronic, specific, and malignant nature; such as grease, canker, scarlatina, farcy, glanders, and a number of others not necessary to enumerate.

The colour of the hair of horses seems to hold some mysterious relation to their breed. There are, comparatively speaking, very few thorough-bred horses of a black or iron grey colour; while greys, blacks, and browns are the predominating colours of draught horses.

Grey horses are subject to one disease which I never saw manifested by those of any other colour; namely, the disease known as melanosis.

Formerly the opinion was current amongst horsemen and veterinary surgeons that white-legged horses are more prone to attacks of grease than dark-legged ones. My experience, however, does not verify this opinion: on the contrary, I have found grease to bear a far more intimate relation to the form of the bones of the extremities than to the colour of the hair. Round-boned horses are more prone not only to grease, but to other maladies of the skin, than are clean-legged and flat-boned horses.

With these preliminary remarks, we will now proceed to describe the several diseases of the skin mentioned at the head of this section.

SCARLET FEVER.

Numbers of highly intelligent horsemen regard with amazement a statement to the effect that horses are occasionally the victims of an attack of Scarlatina, yet the fact is nevertheless a veritable one.

The disease occasionally is not only common amongst horses, but it frequently proves one of the most dangerous maladies which can effect this animal.

The most complete accounts of this disease published by any English veterinary surgeon up to the present time, so far as this malady relates to the horse, are those written from time to time by the author of the present manual. I have treated in all more than sixty cases of Scarlatina, so that I may be considered as being tolerably well acquainted with some, at least, of the principal features of the complaint.

My description of this disease upon the present occasion will be brief. A skilful veterinary surgeon is alone capable of treating it when present in a severe form, so that I shall simply furnish the non-professional reader with a plain outline of its general features, so as to enable him to recognise its presence, and thereby act with better judgment towards both patient and medical attendant.

Medical writers, in describing this disease, as exhibited in the human being, represent it as being presented in a threefold form:—1st, as Simple Scarlatina; 2nd, as Scarlatina Anginosa; and 3rd, as Scarlatina Maligna; a division which to a great extent is applicable to the disease as manifested by the horse, especially with reference to the varieties denominated simple and malignant: Scarlatina Anginosa is but a less severe form of the malignant variety. The Anginosa, in fact, passes into the malignant form by imperceptible gradations.

Simple Scarlatina.—This form of the disease usually appears in association with Epidemic Catarrh; it seldom manifests itself simultaneously with that malady, but usually on the third, fourth, and even as late as the sixth day after the commencement of the former. The animal affected with Catarrh will, perhaps, be fed and left at the usual hour at night in what may be considered a fair way of recovery, but when the attendant enters the stable the morning following, the patient may be found affected in a very peculiar manner: the hair about the neck and the fore and the hind limbs will be raised in blotches, while the limbs will be found in a swollen condition. The blotchy elevations, generally speaking, are not large, but they are exceedingly characteristic of the malady. If the hand be passed lightly over them, scarcely any corresponding elevations can be felt upon the skin beneath. The mucous membrane of the nose will have upon it a few scarlet spots of varying size. The pulse, in some instances, will be increased considerably in the number of its beats; while in others, even when the disease appears very severe, not so much so. If the Epidemic Catarrh or the disease under which the patient labours be attended with soreness of the throat, such soreness may become greatly increased, or it may not. Sometimes the blotchy elevations are confined to the hind legs, and the scarlet spots to the membrane of one nostril; while in other cases both nostrils are affected, and the blotchy elevations are general, but in such a very mild degree as perhaps not to excite the attention of any one but a closely-observing practitioner. If at this stage of the disease the animal be judiciously treated, and the stable be dry, comfortable, and well ventilated, the whole may pass off in a few days without any further mischief ensuing: but if the treatment be improper, the stable cold, damp, and ill-ventilated, and the animal otherwise unfavourably circumstanced, it is

probable that the disease will become more violent, and either assume the *malignant form*, or pass into what is called "Purpura Hæmorrhagica;" and the life of the animal, in either state, be greatly endangered in consequence.

Malignant Scarlatina.—This form of the disease may appear either at once in all its virulence, or it may follow upon the milder states above described.

The patient for some days may have manifested what is usually considered to be Influenza, or Epidemic Catarrh, the symptoms of which, for the most part, will consist of sore throat of an *obstinate nature*, attended with fever more or less severe, with cough, loss of appetite, discharge of purulent matter from the nostrils, and general debility; when suddenly the state of the patient changes, the limbs begin to swell, which swelling presents either an even surface (occupying the whole of the limbs), or it appears in lumps or masses, which are both large and numerous. These lumps are hot, hard, and painful, while those portions of the skin free from such swelling present the blotchy elevations so common to the simple forms of Scarlatina. The membrane of the nose also becomes covered with large-sized spots of an intense scarlet colour, while from the nostrils is discharged a mixture of blood, purulent matter, and serum. At this stage of the disease, the soreness of the throat is excessive, accompanied with a corresponding degree of difficulty in swallowing; the cough is also worse, and of a suffocating character. The pulse increases in the number of its beats, reaching at times 90, or even 100 pulsations per minute, and is of a weak or feeble character. The swollen limbs are excessively tender, and if the patient be left alone he will stand for hours nailed, as it were, to one place, and in one position; it is only, indeed, with the greatest difficulty that he can be

made to move at all. As the disease proceeds, or takes on more intensity, large blisters or vesicles appear upon the limbs in the regions of the joints; these vesicles burst, and discharge a bright amber-coloured fluid, which is very corrosive in its effects upon the skin. In other cases again, remote portions of the organism, such as the ears, will suddenly present a blanched appearance, and become hard and dry as though frozen; and in the course of a day or two, these blanched portions snap off from the parts contiguous, leaving exposed a raw surface, which speedily suppurates. The appetite entirely disappears, and the secretions from the bowels become checked, and what is denominated *constipation* ensues; the urine also becomes scanty, and of a thick yellow or brown colour.

In the course of twenty or twenty-four hours from the commencement (and in many cases even less), the scarlet spots on the membrane of the nose enlarge, and pass into purple-coloured patches, which slough, and leave a raw surface, from which is secreted an abundance of purulent matter; at the same time a similar sloughing goes on around the joints where the blisters or vesicles first appeared. If the disease goes on favourably the fever will generally abate (in the milder states at least) about the fourth or fifth day from the commencement of the more acute stage; while in the more malignant kinds it is seldom that a change for the better occurs before the seventh or eighth day. In its most severe forms, however, Purpura Hæmorrhagica supervenes, and the patient becomes an emaciated and loathsome looking object.

Pathognomonic Symptoms.—The symptoms which are pathognomonic of scarlatina *are the presence of scarlet spots upon the membrane within the nostrils, blotchy elevations upon the skin, and the sudden swelling of the limbs.*

Complications.—Scarlet Fever is sometimes associated with Rheumatism; with Congestion of the Lungs; with a low typhoid state of Fever; with typhoid Inflammation of the Lungs; and with Purpura Hæmorrhagica.

Prognosis.—If the pulse of the patient becomes reduced in the number of its beats within a given time—if the appetite gradually improves, and the debility disappears—if the swollen limbs gradually reduce in size, and the skin becomes cooler, a favourable termination may be expected; but if the debility becomes more marked—the pulse more irritable, feeble, and indistinct—the limbs more swollen, with other symptoms, such as total loss of appetite, difficulty of breathing from an insidious typhoid inflammatory action going on within the lungs; and finally, if Purpura Hæmorrhagica supervenes, the prognosis is unfavourable, and the chances are that the patient will die.

Causes.—The disease in question is generally manifested "epidemically, or as an epizooty among horses," during the spring and summer months,* so that its remote causes are difficult to arrive at; its exciting causes, however, appear to depend upon those states of bronchial and laryngeal disease so common during the periods of the year above named. I have known it to supervene upon an attack of strangles, and upon what is designated "Influenza." Animals of all ages are subject to its influence. One of the most severe cases I ever had under my care occurred in a foal three months old. It may be stated, however, as a fact, that young horses are more liable to the disease than old ones, and that during its prevalence the exposure of horses to cold and wet is very likely to induce it.

* This fact was, I believe, first noticed by myself.

CONTAGIOUSNESS.—With respect to Scarlet Fever in the horse being contagious, I, for my part, am of opinion that it is not. I have treated more than sixty cases of it, but I never yet treated two cases in the same stable, either at the same time or at any distant interval. The case of the foal which I have mentioned was a most severe one; and during the whole period of its illness, which was a little over three weeks, it had free access to its dam, and the foal partook of her milk freely at the commencement, but the mare was never in the least disordered. The foal had also free access to other horses, but none of them were disordered in consequence.*

TREATMENT.—The extensive practice which I have had in the treatment of this disease has led me to the conviction that the more simple the methods pursued, the more likely is the practitioner to succeed in its cure. Everything which can be done should be done *to support the vital power of the patient, and allay the morbid irritation excited by the disease.*

The following are to be regarded as essentials towards effecting this: I.—Thorough ventilation of the stable or loose

* I have been led to make the above observations from reading a note which is appended to an article in Dr. Copland's Medical Dictionary, where the Doctor says that he has evidence for the following inferences:—First,—That Scarlatina was originally a disease of the horse; and that it formerly occurred, and has even recently occurred, epidemically, or as an epizooty among horses. Secondly,—That it was communicated in comparatively modern times from horses to man. Thirdly,—That it may be, and has been communicated also to the dog. And further on, he adds, that Mr. Percival has furnished him with an additional amount of evidence in support of the above inferences. Now, with all due deference to the above statements, I can only say that I have furnished, up to the present period, the most complete history of Scarlatina in the horse which is extant; that I have paid, at all times, the most careful attention to its phases and conditions in the above named animal; and that I never yet became acquainted with one solitary fact which would give the least support to the second and third inferences. See Dr. Copland's Medical Dictionary,—article SKIN.

box. II.—A generous diet, and one suitable to the patient. III.—Cleanliness, warmth, and dryness of the stable or box, and of the animal diseased. IV.—Avoid giving to the patient huge quantities of filthy drugs. The animal should be treated with strict reference to the economy of the life force.

Where practicable the patient should be at once removed into a roomy box, possessing as many of the advantages as possibly can be had, such as the reader will find detailed at page 117. For the animal to remain in the stable to which he is regularly accustomed is in itself detrimental to recovery. The very atmosphere of the place I regard as highly deleterious: where practicable, then, change the habitation of the patient.

Diet.—The diet I have stated should be generous, and of a nature suitable to the patient. By this I mean that articles of food should be given which are easy of digestion, such as sago gruel, boiled rice, raw eggs and water, milk, malt, speared corn, and (when in season) carrots and grass.

During the early stages of the disease, sago gruel, milk, and milk and water may be all that are necessary; but when convalescence is established, and the appetite takes on a vigorous character, food of a more solid and strengthening quality will be required.

Drinks.—The drink should consist of cold water, barley water, milk and water, acidulated water, and gruel. The way in which these articles should be prepared, and under what circumstances administered, the reader is referred to Section VI., pages 108 to 119 inclusive.

Cleanliness.—Unless regular attention be given to the cleanliness of the patient, matters will soon arrive at an intolerable state, especially during the existence of the more severe or malignant types of the malady. What with the discharges

from the sores upon the limbs, from the nostrils, and the effluvium from the dung, the patient, if left alone, will speedily become disgusting. The nostrils will, therefore, need to be frequently sponged, the sores upon the skin to be occasionally cleansed, and the stable or loose box to be kept scrupulously clean.

MEDICINES.—The best medicines in general are Aconite 1, Belladonna, Mercurius, Rhus Toxicodendron, Bryonia 1, Tincture of Cantharides 1, Arsenicum 2, Ammonia Citrate of Iron, Chlorate of Potass, Camphor, Nitric Acid, Muriatic Acid, Sulphur 1st; and as an external application, Ruta Graveolens.

Aconite and Belladonna.—Should the disease be of the simple form, all that may be required in the way of medicines are Aconite and Belladonna. Give Aconite 1 in 2-drachm doses, and Belladonna in 2-drachm doses. They are to be given in alternation morning, noon, and night. Belladonna is also valuable for soreness of the throat. If the soreness be excessive, this remedy should be alternated with Mercurius, or with Rhus Toxicodendon 1.

Bryonia.—This is a valuable remedy to administer in the simpler forms of the disease, or where the limbs are swollen, but not particularly sore. Give it in 2-drachm doses of the 1st dilution three or four times a day.

Tincture of Cantharides.—This is frequently of great service where the limbs are excessively swollen, their soreness severe, and attended with the formation of blisters and vesicles around the joints. It should be given in drachm doses of the 1st dilution, freely mixed with water. It may either be given alone or in alternation with Bryonia. It may be repeated every six or eight hours. Its effects require to be closely watched, as it sometimes causes severe irritation of the urinary organs. Should this occur, Tincture of Camphor is the remedy to allay such medicinal irritation.

Arsenicum is an excellent remedy to have recourse to for the disease during its convalescent stage. Administer it in 2-drachm doses night and morning. Use it of the 2nd dilution.

Ammonia Citrate of Iron is another remedy to use during the convalescent stages. Give it in 2-drachm doses night and morning. Each dose should be mixed with five or six ounces of cold water. Ammonia Citrate of Iron is a remedy to improve the quality of the blood.

Chlorate of Potass.—A valuable remedy to administer when the sores are large, the discharge excessive, and the animal greatly debilitated. It will also prove valuable if administered during the convalescent stage. Give it in 2-drachm doses night and morning, in 6 or 8 ounces of water, for several days in succession.

Sulphur.—This is a remedy of great value to administer when recovery has fairly set in. Give it of the 1st trituration in 2-drachm doses, mixed with a little flour, and wiped upon the tongue, as directed at page 146. Repeat it night and morning for two or three days in succession.

Nitric and Muriatic Acids are valuable to administer at almost any stage of the disease. I generally, however, give one or the other of these acids in the patient's drink. Two or three drachms of the strong acid are mixed with about two gallons of cold spring water, a part of which may be given to the patient at any time. Either of the acids may be chosen, as their effects upon the system, if in health, are very similar.

Ruta Graveolens may be used as a wash to the sores upon the limbs and within the nostrils. Use it in the proportion of 6 drachms of the tincture to 16 ounces of water. Apply it several times a day.

Fumigation of Stable.—The stable may be fumigated occasionally, as the practice will tend to maintain its purity. The

articles commonly used for this purpose are Tar and Chloride of Lime. A very excellent preparation for this purpose can be made of the following ingredients, but in using it the animal must be previously removed from the stable or the box for at least two or three hours :—

℞ Black Oxide of Manganese,	...	½ ounce.
Common Salt	...	1 ounce.
Sulphuric Acid (by weight)	...	1½ ounce.

Place the whole together in a large-mouthed bottle, (a common harness blacking bottle will do), close the apartment, and leave it alone for two or three hours.

MANGE.

Mange is very similar in its general characters to Itch in the human being. It is far less common than formerly. Greater attention to the cleanliness both of the animal and to stables in general have almost, and, I think, ultimately will, totally banish Mange from our list of diseases.

Mange is a very highly contagious affection; the reason of this will be fully evident to the reader when he understands the cause of the disease. It spreads with an amazing rapidity when communicated from one horse to another; but, on the contrary, when it arises in what may be denominated a spontaneous manner, its progress is generally slow, but nevertheless well marked.

Symptoms.—Mange is a malady which, if once fairly established, is easily recognised by any one conversant with its peculiarities; but during the early stages of its existence its true character may possibly be overlooked by a careless observer, from its close resemblance to Prurigo and other diseases of the dermal structures.

When caused by contagion, the early symptoms of Mange are excessive itching of the skin and falling away of the hair in tufts and patches from various parts of the body. The itching usually commences at the roots of the hair of the mane and tail, gradually extending from thence along the neck and back, down the breast, and under the abdomen. The limbs are usually the last to become affected, and when affected, the most tedious to cure. If the affection is allowed to run its course unchecked by proper treatment, the animal very shortly becomes all but entirely denuded of hair; the skin will also present a bleached condition, being dry, scurfy, and deeply furrowed, with here and there a few solitary hairs projecting from its surface. At this advanced stage of the malady, the skin emits a peculiar dry burning heat, so peculiar, indeed, that any one thoroughly conversant with the disease would recognise it by this alone.

The skin, where it is denuded of hair, will present innumerable small pimples of a dull red colour, some of which are filled with a pale, brown-coloured liquid, while others are dry and scaly.

If the extremities are diseased, the hair upon them will exhibit a dry ragged state; the skin in the region of the joints is sometimes scabby and ulcerated, and sometimes raw, from the animal constantly rubbing one limb against the other.

When the Mange is severe, the general health of the patient suffers; the animal becomes dull and spiritless, and its condition sinks rapidly.

The symptoms now described are such as are usually observed where Mange originates from contagion, in which case, as I have previously remarked, the affection spreads over the entire surface of the skin with astonishing rapidity. In the generality of cases, however, where the affection arises spontaneously, it

is the reverse of this; the malady spreads slowly, attacking the skin, as it were, inch by inch.

Mange, in its spontaneous form, usually commences upon the limbs between the coronet and the knee, or between the coronet and the hock, and their appearance when affected is characteristic of the malady. The hair is broken and uneven in its length; portions of the skin are covered with short, scanty, down-like hair, which appears as though dusted with a pale mixture of flour and soot. Sometimes filthy looking sores are present, surrounded by thick crusts of scurf; in other cases the skin and sub-textures are deeply ploughed with long ragged sores.

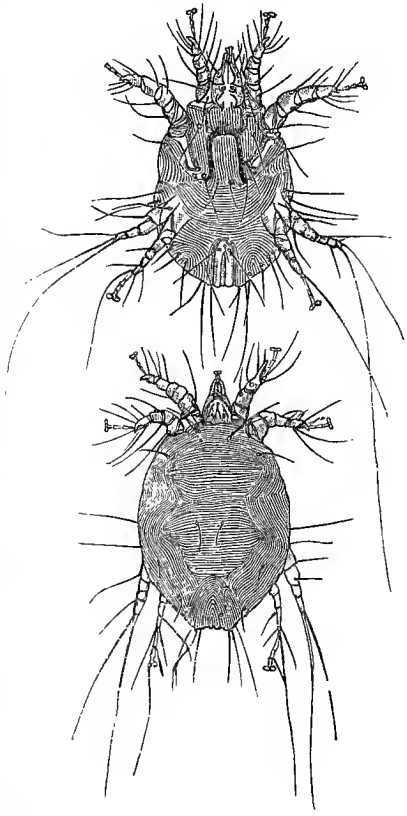
The general health of horses thus affected may be good or it may not. I have known horses to be affected with Mange of the extremities for years, and remain stout and vigorous the whole time; while the general health of others, diseased to all appearance in a precisely similar way, was indifferent, and their appearance unthrifty and mean-looking.

Causes of Mange.—The immediate cause of Mange is now ascertained beyond all doubt to depend upon the existence of a species of insect, denominated by naturalists *Acari Equi*, being present upon the skin in immense numbers, and which are known, under conditions favourable to their increase, to spread with excessive rapidity.

The figures on the following page are exact representations of this insect as it appears upon the stage of a microscope, when viewed with the aid of a good one-inch object glass; and are copied from engravings, after drawings by Erasmus Wilson. The figure at the top of the page represents the insect as it appears when placed upon its back; the lower figure represents the dorsal surface of the same, or as the insect is seen when

moving from place to place. Both insects here represented are of the female species. The male differs in many essentials from the female.

Fig. 17.



This insect is very minute in size: the annexed figures are magnified about 300 diameters. If viewed with the microscope by reflected light, it appears dark; but when examined by condensed light, it is seen to be of a clear white colour. It possesses eight legs, two pairs of which are placed before, and two pairs behind. Attached to each of the four legs in front, and to two behind, is a sort of jointed sucker. By these the insect is enabled to fix itself firmly to the skin. One pair of legs situated posteteriorly are destitute of suckers, but have long projecting hairs instead.

From the presence of these long hairs upon the limbs; from the peculiar structure and position of the limbs of the animal; from the readiness with which the insect can travel

in a line straight before it; and from the difficulty it evidently experiences in turning round, even upon a smooth glass slide, I am of opinion that the creature, when attached to the skin of the horse, can only travel but in one direction, and that is straight forward.*

Pathognomonic Symptoms.—The pathognomonic proofs of Mange are of a very direct nature. *The existence of the insect upon the skin will at once afford certain and conclusive evidence of the fact of the existence of Mange.* It can be readily determined. To do so, comb a quantity of the scurf from the skin upon a piece of black cotton having a smooth surface, and by spreading the scurf upon it, and observing it closely, any one having a good vision may (if the insect be present) readily detect its movements with the naked eye. A good common pocket lens, however, will aid the observer materially.

Those parts of the skin covered with downy hair and fine scurf intermixed, are the best localities to discover the insect. Cold renders the insect torpid: warmth quickens its movements considerably.

Treatment.—In every case of Mange the patient should be treated both topically and constitutionally. The best remedies to apply externally are Sulphur, Creasote, Mercurial Ointment, Hog's Lard, and Olive Oil.

Sulphur, in one or more of its various forms, has been a specific remedy against Itch of the human being and Mange of the horse from time immemorial. I generally use Sulphur,

* On many occasions, when observing the movements of the Mange Insect, I have witnessed the slow manner with which it turns; the long hairs attached to the hind limbs will prevent its turning upon a rough irregular surface, such as the surface of the skin, particularly when the latter is covered with hair.

in combination with Mercurial Ointment, Lard, and Olive Oil, as an application for outward use.

℞	Sulphur	1 lb
	Mercurial Ointment	8 oz.
	Hog's Lard	1½ lb.
	Olive Oil	Half a pint.

The above ingredients should be thoroughly combined, and a portion should be liberally applied to every part of the skin where the Acari are likely to lodge.

Should the malady occur during the summer season, expose the patient, after being dressed with the ointment, to the free action of the sun, the heat of which will increase the action of the application considerably. It is seldom that over three or four dressings are required to effect a radical cure.

Great precaution should be taken to apply the ointment to every part of the skin affected; otherwise the Acari will again spread, and speedily become as virulent as before.

It is a good practice to wash the patient in the course of thirty or forty hours after each application of the ointment. Wash with warm water and soft soap; and when the skin and hair are thoroughly dry, paint the body over with Olive Oil. This will check the exhalent action of the dermal structures, and prevent the patient from taking cold.

Creasote.—Sometimes the above compound fails to produce that immediate effect which is desirable, in which case recourse may be had to a mixture of Creasote and Olive Oil combined in the following proportions:—

Creasote	...	2 ounces.
Olive Oil	...	3 pints.

Shake these ingredients together until thoroughly incorporated; then apply what is necessary to the skin by means of a clean, large sized painter's brush. After a liberal use of the above mixture, the skin sometime afterwards should be washed as above directed.

INTERNAL REMEDIES.—Amongst the best remedies for internal use, I may enumerate Sulphur, Arsenicum 2, and Ammonia Citrate of Iron.

Sulphur.—Use the Sulphur in drachm doses of the 1st trituration, and give a dose night and morning upon the tongue, as directed at page 146.

Arsenicum 2.—This remedy may either be given alone or in alternation with Sulphur. If used in alternation with the latter, administer it in 2-drachm doses every morning, and a Sulphur powder every night.

Ammonia Citrate of Iron is an excellent remedy to give when the patient is feeble, spiritless, and poor. Alternate it with Sulphur. Give the Iron in 2-drachm doses, in half a pint of cold water every morning, and a Sulphur Powder every night, for several days in succession.

DIET.—The diet of the patient should be changed, and it should be of a liberal nature. Boiled barley, bran, locust, carrots, boiled oats, and good old hay should constitute the principal articles to use. (See Section VI.)

STABLE.—The stable, the clothing, harness, or if a draught horse, the gears, together with all brushes, combs, and dusters, should be thoroughly cleansed, otherwise the malady will again appear and run a similar course to what it did in the first instance. In addition to washing the above articles, many of them should be painted over with the creasote mixture.

GREASE—CHAPPED HEELS.

A different name is required for the present disease. The malady is called Grease simply because, during its existence, a greasy substance is secreted, or rather excreted from the sebaceous glands of the heels. The name of a disease should be as expressive as possible of the entire phenomena, not only of the malady, but also of the nature of the structures involved.

One of the most disgusting forms which Grease is capable of manifesting itself is now rarely seen. I allude to what Mr. Percival denominates its "grapy" condition.

Grease may present itself under three well marked forms or states, which are successive stages of the same disease, viz:—The *simple*, the *ulcerative*, and the *grapy* forms. This is Mr. Percival's division of the malady, and, upon the whole, it is a good one. It possesses the recommendation of being both a simple and natural arrangement.

Chapped Heels.—Chapped Heels may be regarded as Grease in its most ordinary form. It is a very common malady, and one with which most horsemen of experience are familiar. It prevails the most during the autumn and winter months. It sometimes confines itself to the hind limbs, at other times to the fore limbs, and on some occasions it is observed in the heels of all the extremities at the same time.

During the autumn and the commencement of winter horses undergo a change in their coats, which is also attended with a state of general debility; and while the organism is thus unfavourably circumstanced, cracked heels are no uncommon accompaniment.

Symptoms.—The animal may be unwell for several days; he may refuse his food; the hair over the surface of the body will look dry, be harsh to the touch, and present altogether an

unthrifty aspect: if he stands for a few hours in the stable the limbs, particularly the hind ones, swell considerably. The skin of the heels will crack, and lameness will ensue; and from these cracks will exude an offensive, greasy discharge. If the skin of one heel only is cracked, the lameness is more apparent; if of all the heels, the patient will travel as though the limbs were posts. The skin of the legs from the feet to the knees, or from the hocks to the feet, will be more or less tender.

If the general health be deranged, which is not always the case, the pulse will be disturbed: such disturbance depending upon the degree of derangement existing within the system.

Ulcerative Stage.—The second or ulcerative stage of the disease is marked by an increase of the inflammatory action within the structures of the limb affected. The cracks become more numerous, and extend more deeply into the limb. Within these cracks angry flesh-looking growths present themselves, from which is exuded a thick, greasy, purulent matter of a yellow colour, and emitting a disgusting odour. The hair of the animal may appear dry and unthrifty, and the abdomen may present a contracted condition, or these symptoms and states may not be present; but if they are, the appetite will be bad, and the system deranged generally.

Grapy Form.—This form of the disease may be regarded as invetérate. The structures of the limbs have become permanently altered in their organization. The cracks alluded to as being present in the ulcerative stage, become lost, and in their place the fleshy growths become not only larger, but more numerous; while, from their surface arise innumerable points of a bright red colour, which readily bleed if irritated. In form these fleshy growths are not unlike small bunches of

grapes; or, were it not for their colour, they would closely resemble a full-blown cauliflower.

At first these growths are highly sensitive, but this sensitiveness in time becomes less and less as they become indurated, insensible, cartilaginous, and even horny, which would appear to be their final state. "Other changes accompany these: the hair gradually falls off, leaving the grapes either destitute of any hairs, or but very thinly beset with them, and those few in a state of erection, like bristles upon a hog's back. From such parts of the skin as remain unoccupied by grapes, and from the crevices between them, issues a greasy, rancid, and most offensive discharge, here and there mingled with blood. By this time, also, the leg has acquired an enormous bulk, from which circumstance alone, independently of its sore and painful condition, the action of the whole limb is greatly impeded."* In other cases again, the malady attacks the feet of the greasy limbs; it spreads from the heels to the frogs and the soles of the feet, and is so destructive in its progress, that the frog, the horny soles, and the sensitive soles become one mass of rottenness, diffusing an odour "which is smelt ere it is seen."

Causes.—The causes of Grease are numerous. They are of a twofold nature, viz.: such as predispose the animal to the malady; and such as excite it.

The predisposing causes are breed and structural peculiarities. Coarse-bred and round-boned horses are extremely prone to attacks of this nature. Clipping the hair of the heels, particularly during the prevalence of wet weather, or wet in alternation with frost, will cause the heels to speedily crack and inflame. The bringing up of young horses from grass, and placing them at once to live upon hard food, or the feeding of

* Percival's Hippopathology.

young horses with highly stimulating diet, with insufficiency of labour or exercise, are with such animals the most common sources of the affection.

Uncleanliness, from allowing the animal to stand for days in succession in his own litter; gross feeding; long exposure of the limbs to wet during the winter; or from working the animal in wet and muddy localities, are amongst the common causes of the malady in question.

In numerous instances Grease will arise from derangement of the stomach. I have elsewhere treated upon the sympathy which exists between the skin and the mucous membrane.* Now, in the production of Grease, we sometimes behold a striking example of this sympathy. The patient may be a delicate feeder, or a ravenous one; in either case, however, more food is perhaps taken than the stomach can properly digest, when derangement of a direct nature supervenes to the organ; and extends from a sympathetic or secondary nature to the limbs.

Treatment.—The treatment of Grease will require to be determined by the nature of its cause. If the malady arises from derangement of the stomach, it is of little or no use to resort to mere outward applications. So long as the gastric derangement continues, so long will the Grease remain. On the other hand, if the disease be of a simple nature, and originates from causes which have acted directly upon the tissues involved (as the action of frost for example upon a damp skin), rest of the patient, together with warmth and mild outward applications, may prove all that are necessary.

There are several indications by which an observer may easily determine if derangement of the stomach be a continuous

See Page 175.

cause of irritation to the limbs:—1st, the obstinacy of the disease, or where it remains in spite of all ordinary treatment of a local nature; 2nd, unthriftiness of the skin; 3rd, irregularity of the appetite; and 4thly, where the appetite is enormous, accompanied with a gross state of the system.

External Remedies.—Prior to the application of a remedy externally, remove the hair carefully from the sores and cleanse them well with tepid water and soap. The external remedies comprise Poultices, hot water Bandages, Fomentations, Lotions, and the application of Balsam of Sulphur.

Poultices.—Of poultices we have previously treated upon at pages 149 to 155. The simple form of Grease will perhaps require little else than the application of warm water bandages, or warm bran poultices to the limb, together with the exhibition of a mild purgative ball.

During the ulcerative stage, however, yeast poultices are indicated; they are necessary when the fissures in the affected limb are large, the fleshy growths angry looking, and the discharge abundant and highly offensive.* Charcoal poultices are also indicated at the commencement of the ulcerative stage of the disease.

Fomentations.—Warm water fomentations will be beneficial at the commencement of the *simple* and *ulcerative* forms of the malady. Place the affected limb once or twice a day in a bucket of warm water, or soak a woollen bandage in the water and fold it around the limb, and afterwards fold a dry bandage above it, so as to retain the heat and moisture of the wet one as long as possible.

* For instructions with regard to the making of yeast and charcoal poultices, see page 151.

Lotions.—Tincture of Calendula, Tincture of Ruta Graveolens, and the Liquor Arsenicalis are amongst the best remedies to use as lotions. Calendula and Ruta are applicable at the commencement of the disease. The Liquor Arsenicalis is proper during the convalescent stages. The Calendula Lotion is to be prepared as follows:—

Tincture of Calendula			...	1 ounce.
Water	...	...	...	1 pint.

Mix together and apply freely to the sores several times a day, or when the poultices are changed.

Ruta Lotion should be made of like proportions of tincture of Ruta and water. It is not necessary to use both lotions at the same time. Sometimes one will act beneficially to the same case, when the other will not. Lotion acts the best if applied warm.

After the limbs have been fomented, or bathed with warm lotion, they should be immediately folded in dry woollen bandages.

Balsam of Sulphur.—This is an excellent remedy to apply to the limbs when the disease has become chronic. It is a substance of about the consistence of treacle: it should be painted upon the limb with a soft brush at least twice a day, taking care at the time to have the sores free from dirt.

Internal Remedies.—Amongst the best remedies for internal use are Aloes, Arsenicum 2, Nux Vomica 2, Thuja 1, Muriatic Acid, and Sulphur.

Aloes.—If the skin be at all foul, and the general health deranged, it is good practice to commence the treatment by administering a purgative to the patient. It cleans out the *prima via*, and prepares the system for the action of other remedies.

If the animal be large in size, give six or seven drachms of Barbadoes Aloes, combined with one or two drachms of powdered Gentian, made into a ball with Palm Oil. For instructions with respect to the preparation of the patient for the purgative, and the proper treatment of the animal afterwards, the reader is referred to pages 75, 76, and 77.

Arsenicum and Nux Vomica are valuable remedies to administer when the stomach is disordered and the general health of the animal indifferent. Arsenic is an indispensable remedy in almost every form of skin disease. Give it in 2-drachm doses of the 2nd dilution, and repeat it night and morning; or use it in alternation with Nux Vomica of the 2nd dilution, in 2-drachm doses.

Muriatic Acid frequently proves valuable if given when the skin is dry and scurfy, and the appetite indifferent. Give drachm doses of the strong acid in a pint of cold water, night and morning.

Sulphur is frequently necessary to administer during the convalescent stage. Give it in drachm doses of the 1st trituration, either alone or in alternation with Thuja of the 1st dilution, in 2-drachm doses.

Diet.—The diet of a patient severely affected with Grease in any of its forms is a matter of considerable importance. Should the animal be fed with food, the like of which he may have partaken of for years, as grains or beans, or bean flour, the withdrawal of such food, for some time at least, is essential to the cure. Carrots and boiled barley may be allowed, and a little malt. The animal should be fed with a liberal diet, and only in small quantities at a time, If the season be proper, allowing the patient to run a few weeks at grass would, in all probability, prove very advantages.

SURFEIT.

The term SURFEIT is usually applied to designate nearly every affection of the skin to which the horse is subject. If the animal merely rubs himself against a post, he is said to be affected with "a mild surfeit:" if violently, a "bad" one. In fact, both with veterinary surgeons and with horsemen, the term is used in a very wide sense. The word is derived from the French verb, *surfaire*—to over do; and if the affection be designated with reference to its causes, or when it exists from an effect of over-feeding from too rich a diet, it is a term in every way appropriate.

"Horses," says Mr. Percival, "standing in stables, full of condition, and but inadequately worked, are subject to heat and itching of the skin, and to occasional eruptions which the groom never fails to attribute to 'heat of the blood:' a notion very much in accordance with the French appellation of *ébullition*, for the same disorder, and one evidently derived from the supposition that the blood was in some way or other the cause of it. The same notion, also, will be found to prevail in our present pathology of the case. We say that the animal, from high feeding and the want of due work or exercise, becomes PLETHORIC; by which we mean, he either accumulates in his system a superabundance of blood, or else makes it of too rich a quality for ordinary purposes; and the consequence is, that by an effort of the vital powers, the redundance comes to be thrown off in the form of surfeit or eruption; and in this manner other and more serious evils are averted."

PRURIGO.

One of the most common forms in which Surfeit is exhibited, is that of Prurigo, or a state of general itching of the skin. It is a malady common in young and in coarse-bred horses; and especially in round-boned, and thick-set or punchy animals.

Symptoms.—The symptoms of Prurigo are well marked. In its milder forms the itching prevails over the skin generally, but not violently. In the worst forms the itching increases, and the violence of the patient is frequently excessive. The animal, unless prevented, will rub with such fury against any projecting body favourable for the purpose, that the skin in many places speedily becomes raw and bleeding. I have, on numerous occasions, treated cases of this nature, where the itching of the skin was so excessive as to cause the horses to throw themselves upon the ground, and rub against it until they either ceased from exhaustion, or were forced by beating to desist.

In other forms of Prurigo, particularly when old horses manifest it, the disease will appear at certain periods; while, in other animals, in spite of every known kind of treatment, the disease will constantly be present. Of the former, we frequently observe it to appear during the hot months of summer; of the latter, all I can say about it is, that it appears to depend upon a bad state of the digestive organs. Horses thus affected are always gross feeders and possessed of ravenous apeetites.

The periodic attacks of Prurigo are marked by different states of severity. Sometimes the attack is mild; at other times the patient will so bite and rub himself, as to denude the skin of hair, or otherwise they give to it the appearance of being affected with Mange.

Treatment.—Attention should in the first instance be directed to the diet of the patient. Unless this be properly regulated, medicine will prove of little or no avail. Every article af food which tends to maintain the morbid irritation of the skin should be at once disused, and others of a cooling tendency substituted.

Coarse bread steeped in milk and water will, in all probability, prove the best kind of food to commence with, especially if the case be excessively severe. Sago and milk will also be suitable, or stewed rice and bran, or boiled barley and bran; carrots, if in season, should be allowed.*

INTERNAL REMEDIES.—The best remedies in general for internal use are,—Aloes, Nux Vomica 2, Arsenicum 2, Phosphorus 1, Rhus Toxicodendon 1, and Sulphur.

Aloes.—Commence the medical treatment by the administration of a purging ball. The quantity of Aloes necessary for a dose should be regulated by the breed and size of the patient. For delicate, well-bred horses, 3 drachms of Aloes will generally prove sufficient; while for coarse-bred, large-sized horses, 5, 6, or 7 drachms of the drug may be given.

For further particulars with respect to purgative medicine, see pages 75, 76, and 77.

Arsenicum 2.—When the action of the purgative has subsided, give Arsenicum 2 in 2-drachm doses morning, noon, and night, mixed with a little water each time; or it may be alternated either with Phosphorus 1, in 2-drachm doses, or with Rhus Toxicodendron in like proportions. Sometimes it is best to alternate Rhus Tox. with Phosphorus.

Sulphur.—Sulphur is the best if given when recovery has set in. Give it of the 1st trituration, in 2-drachm doses, either alone or in alternation with Arsenicum 2.

EXTERNAL REMEDIES.—The best remedies in general for topical use are Arnica, Liquor Arsenicalis, and Acetic Acid.

Tincture of Arnica	1 ounce.
Water	1 pint.

Mix the two together, and bathe the sore parts of the skin

* See Section VI., pages 109 to 117.

several times a day. If the Arsenicalis be used in preference to the Arnica, mix it with water in similar proportions.

Acetic Acid.—For the Acetic Acid Lotion, mix it with water as follows:—

Acetic Acid ..... 1 ounce.
Water ..... 1 quart.

Sometimes the Acetic Acid will afford relief when the other means have failed to do so.

ITCHING OF THE EXTREMITIES.

A second form, in which Surfeit is manifested, consists in a violent itching of the limbs. This form of the disease confines itself for the most part to the hind extremities; occasionally the fore ones are also affected.

It is the most common to draught horses of the coarse-bred variety. It is known by the animal frequently rubbing one limb against the other; and so violent is this rubbing at times, that the extremities are frequently lacerated to a very severe extent. Sometimes the patient stamps the ground violently, or rubs one leg against the other, and stamps at the same time. When the disease is violent, or when it is of long duration, the skin from the hocks down to the hoofs will become unnaturally heated, dry, rough, and scurfy. The hair will also lose its natural polish and softness, and become dry; and, instead of lying close to the limb, will project from the surface. In other cases, again, the limbs may exhibit patches which are denuded of hair, at the same time the skin is deeply fissured, and from these fissures blood sometimes exudes.

In other cases, particularly when the disease is advanced, a number of hard but small elevations will appear upon the inner surface of the limbs, which, on some occasions, itch most intolerably.

CAUSES.—This affection generally arises from gross feeding. Beans are occasionally productive of it. I have also known it to arise from the animal working a considerable time in wet clay. Want of cleanliness is another cause. The skin is these cases should be examined for Acari.

TREATMENT.—Attention in the first place should be directed to the diet, and to the cleanliness of the animal. Take away the beans.

If the disease proceeds from the patient working in clay, the animal had better be removed from its influence; but if that cannot be done, the affected limbs should be protected.

I have not been able to prescribe anything more efficacious for this purpose than rubbing upon them (just before the animal goes to labour) a quantity of Palm Oil, or a mixture of Palm Oil and Tallow; or, if the Palm Oil cannot be readily procured, use the Tallow alone. Either of these substances will for a certain time, if liberally applied, prevent the deleterious action of the clay upon the limbs.

The best remedies for this affection in general are Arsenicum 2, Phosphoric Acid 2, and Sulphur.

Unless beans are witheld from the animal affected, and the extremities kept clean, medicine will seldom prove of much avail, especially if the patient be predisposed to the disease.

ERUPTIONS.

A third condition under which Surfeit exhibits itself is that of an eruption upon the skin, which may be either local or general.

Two varieties of this affection are occasionally manifested which appear under somewhat different circumstances, run a different course, and terminate in a different manner. Both varieties, however, have this in common,—they usually exist

without any disturbance in the general health of the animal. For the want of plainer terms, I shall denominate these different eruptions by the names of *Dry or Scurfy, and Papular or Blotchy eruptions.*

The Scurfy Eruption is characterised by the very insidious manner in which it appears. It is usually present upon the skin about the hind quarters, the neck, and occasionally upon the shoulders. The eruption consists of innumerable small and somewhat hard elevations; and if the hair which immediately covers them be turned aside, so as to fully expose them to the bottom, they will present to view a dirty grey-coloured appearance, while, if one or two are loosened from their matrix and opened, the whole will appear to consist of a chalk-like substance. It is seldom, as I have before observed, that this form of eruption is attended with any constitutional disturbance; some horses, in fact, are never free from an eruption of this character, the cause of which, in numerous instances, we may affirm, is dependent upon a morbid influence resident within the mucous tissues of the stomach and bowels.

The Papular Eruption usually makes its appearance upon the skin very suddenly. It exhibits itself for the most part during the summer season, particularly if the animal be exposed when the temperature of the weather is very high, or when it is subject to rapid and extreme changes; whereas the scurfy variety is common to all periods of the year. The attack, as I have just observed, is sudden. A groom may leave his horse, as it were, now, and upon returning to his charge in an hour hence, may find him covered from head to foot with large blotchy elevations.

The appearance of the eruption is peculiar: it consists in some instances of round flat blotches, varying in size from a

sixpence to that of the palm of the hand. In other cases the blotches are intermingled with lumpy formations within the skin, which range in size from a pea to a walnut.

It is seldom in cases of this nature that the pulse is disturbed, or that the general liveliness of the animal is known to fail.

TREATMENT.—The scurfy variety of the malady cannot be readily removed with medicine. The change produced within the skin in these cases is usually of an obstinate character. The principal means of cure will depend upon the skilful hygienic management of the animal. A clever groom will manage cases of this kind the best.

The proper remedies to administer are Arsenicum 2, Sepia 2, and Sulphur. For hints relating to Diet the reader is referred to Section VI.

The *papular* form of the disease is rarely difficult to manage. A quiet, cool stable, a simple mash or two of bran, together with a few doses of Nux Vomica, will, in the generality of cases, suffice to effect all that is necessary.

BULBOUS PRURIGO.

A fourth form of surfeit is a malady not hitherto described by any veterinary writer. From its peculiarities I venture to designate the disease as above named.

Bulbous Prurigo is a common affection amongst horses during the prevalence of hot weather, and sometimes (though rarely) it is observed during the winter months. Heavy draught horses are the most subject to its effects. Harness horses are also occasionally affected by it, particularly those which work severely and perspire much, such as livery and cab horses.

Symptoms.—The first appearance of the disease is marked by circular patches of the skin becoming denuded of hair, and thus they are left smooth and shining: the exposed surface, however, speedily present clusters of minute pimples which are attended with itching, and exude a pale-coloured serous fluid. Soon after the appearance of the pimples, the structures immediately below begin to swell. The swellings, when fully formed, present a bulbous or lumpy appearance, which are sometimes tender and sometimes not.

The disease, having reached what may be designated its bulbous stage, may remain so for an indefinite period, unless the animal be judiciously treated, or the weather should become colder; when the bulbous enlargements gradually disappear, and the denuded patches begin to put forth new hair, which at first is of a downy kind, and darker in colour than that upon any other part of the body,—thus giving the animal a mottled appearance. Sometimes, however, these bulbous swellings take on a more active state of inflammation: they become painful, purulent matter is formed within them, suppuration is established, and they disappear in consequence.

Treatment.—The treatment is not a matter of difficulty. Attention should be directed to the gears, or to the harness of the animal affected, and to the general cleanliness of the skin.

The best remedies for internal use are Arsenicum 2 and Sulphur. Give Sulp. of the first trituration in 2-drachm doses every morning for five or six mornings in succession; also use Arsenicum 2 in 2-drachm doses every night, for a like period. Liquor Arsenicalis may also be occasionally applied as a wash to the skin. Use it in the proportion of 1 ounce of the liquor to 16 ounces of water.

WARBLES.

Warbles, or "Warables," as the affection is frequently termed in Yorkshire and Lancashire, is a form of skin disease which frequently proves of great annoyance to horses.

The disease in question is the most common to horses during the hot months of the year, and when they are fed upon green food, and subject at the same time to severe labour. Draught and harness horses are those most commonly affected by the malady.

Symptoms.—The disease is not difficult to recognise. A number of small round lumps become manifest upon various parts of the skin; they sometimes appear suddenly, at other times slowly and insidiously. Most commonly they appear at the junction of the neck with the withers, upon the sides and in front of the shoulders, and along the back, and upon the hind quarters.

At first these lumps are itchy; afterwards, if neglected, and they are irritated to a greater extent, they swell, and present other symptoms and states common to the inflammatory condition. The sub-tissues of the part become at times extensively involved, and not unfrequently the inflammation goes on until it terminates in purulent abscess; and finally resolution of the parts take place after the contents of the abscess are freely evacuated. Abscesses of this kind generally occur either at the bottom of the neck at its junction with the withers, or in front of the shoulders.

Causes.—In the generality of these cases several causes will probably be found acting in association. Coarseness of breed is a predisposing cause. The disease is the most common in coarse-bred, hard-worked horses. Amongst the common causes of a direct nature are excessive labour of the animal when exposed to the hot sun; feeding of the horse with green

watery food; excessive perspiration and suppression of it in those parts covered with thick heavy gears; a diet that is too stimulating; and functional derangement of the digestive organs.

TREATMENT.—The treatment should vary according to the state of the disease. *Firstly*, to ascertain the cause; and if it be one which admits of removal, remove it.

Secondly, look to the harness or the gears. Are they heavy? Do they fit properly? Are they clean? If the patient be a draught horse, and the neck and shoulders are the parts affected, and the collar is lined with thick woollen check, remove the check, and in lieu of it substitute leather or linen.

Woollen lining causes the skin to become intolerably hot; it also absorbs the perspiration until the lining is saturated, and this, together with the dirt which accumulates and adheres to these wet parts, so irritates the skin, that the poor brute, unless relieved, will be compelled to work in a state of indescribable torture. The collar, cart saddle, and other parts of the gears in close contact with the skin, if lined with leather, will admit of their being regularly washed and cleansed, which will not only prove beneficial to the skin, but of daily comfort to the horse when at work.

Thirdly, The sores should be well washed with soap and water, and all the hair clipped thoroughly away, particularly if the disease be located at the bottom of the neck. Unless the hair be removed, it will work into the raw cracks and fissures, and render them more irritable. So long as the Warbles remain, they should be repeatedly washed, and the gears should be kept scrupulously clean.

Fourthly, If the Warbles inflame, and the inflammation extends to the sub-tissues, the patient should rest, and the diseased

parts should be frequently fomented with warm water and warm Arnica Lotion. This treatment will either speedily disperse the inflammation, or if it be too far advanced, it will hasten suppuration. When it has arrived at this stage, the Abscess should be freely lanced and its contents liberated. After the pus is evacuated, the sore will rapidly heal, particularly if aided by rest and the application of warm Arnica Lotion.

The best remedies in general for internal use are Arsenicum 2, and Sulphur 1.

Arsenicum 2.—Give the Arsenicum in 2-drachm doses every night for five or six nights in succession; each dose may be mixed with 2 or 3 ounces of water.

Sulphur.—Give the Sulphur in 2-drachm doses every morning for five or six mornings in succession. It may be administered in flour, as directed at pages 145 and 146.

Lotions.—The Arnica Lotion should be made as follows:—

Tincture of Arnica	...	2 drachms.
Water ...	...	1 pint.

Mix together and apply to the sores warm.

Sometimes it is better to use the Arsenicalis Lotion. Make it as follows:—

Liquor Arsenicalis	...	4 drachms
Cold Water ...	...	1 pint.

Apply it warm to the Warbles four or five times a day.

SORENESS, OR ACUTE IRRITATION OF THE SKIN.

Soreness, or Acute Irritation of the Skin, is another disease of the dermal structures, which hitherto has not been described.

It presents itself in two forms—viz., general and local Acute Irritation of the skin.

Acute General Irritation of the Skin is an affection which sometimes manifests itself upon horses during the clipping season. Hitherto I have not seen this form of the disease at any other time, nor under any other circumstances. Its cause, so far as I have observed, appears to be dependant upon the animal being clipped.

The disease is characterised by a general soreness; if any one attempts to place his hand upon the skin, the animal shrinks from the contact with every appearance of alarm. Sometimes the general soreness is so excessive, that it is dangerous for any one to hastily approach the poor brute: he will kick, and resist being handled to the utmost of his power. Both the skin and the hair are dry and harsh to the touch.

In many cases great numbers of small, hard, round elevations are present upon the skin in the regions of the neck and the breast, upon the inner surfaces of the fore limbs, upon the haunches, under the abdomen, and around the hind limbs from the stifle joints down to the hoofs.

The appetite is occasionally impaired, and the pulse increased in the number of its beats; frequently, in the milder forms of the affection, neither the appetite nor the pulse are much affected. Sometimes the malady is associated with swelling of the limbs, chapped heels, and in horses, with swelling of the sheath.

Acute Local Irritation of the Skin is far more common than the general form of the affection. It appears to be dependant upon previous injury inflicted upon the part; or from the saddle, the harness, or the gears improperly fitting. Sometimes the backs or the shoulders of horses so affected will remain tender for months after they have recovered from the immediate effects of the crush of a saddle upon the back, or an injury upon the shoulder from a collar. In one or two

instances I have known soreness of this kind to remain for years; while in other cases of a similar kind, I have known it to disappear almost at once upon using saddles, harness, or gears which *fitted* the animals affected.

Horses suffering from local irritation of the skin, generally become turbulent with every one who may attempt to handle the parts affected; and what appears singular, they are frequently the most violent if lightly and delicately handled: handle them rudely, and they at once become quiet.

Treatment.—First general soreness of the skin. The best remedies are Arsenicum 2, and Sulphur 1.

Use the Arsenicum in 2-drachm doses, two or three times a day, according to the urgency of the case: this will usually remove the more acute symptoms; afterwards give Sulphur of the 1st trituration, in 2-drachm doses, night and morning for four or five days in succession.

If this form of the disease be associated with Chapped Heels, treat that affection as I have before directed in the article Chapped Heels, page 192.

Local Soreness.—To successfully treat the second form of the malady is more difficult than the first. Examine the saddle, harness, or gears, and see that they fit properly and are comfortable to the patient, and especially to the part affected. Should the harness or gears fit properly, and the irritation remain, it will be best to allow the animal rest, or if practicable, a short run at grass. Freedom from all outward sources of irritation, and full exposure of the skin to the cold air and the rain, appear to act the most quickly and effectually in thoroughly eradicating the morbid condition.

ANGLEBERRIES.—WARTS.

Angleberries, or Angleberry, is the name given to certain growths of a peculiar nature, and which are of common occurrence upon the skin of horses.

The localities upon which Angleberries usually appear, are the sheath; the superior and inner surfaces of the hind limbs; under the abdomen; along the eyelids; and upon the sides of the nose. They appear for the most part to be confined in their development to the thin and more delicate regions of the dermal structures. We never observe them to be situated upon the back; nor upon the hind quarters; nor upon the sides, or along the crest of the neck; nor upon the outer sides or surfaces of the limbs.

Angleberries vary in size from that of a small pea, to that of a large sized potatoe. The variation in this respect being in fact dependant upon the degree of growth at which it may have arrived when inspected. A growth of this kind will commence in the first instance as a very small hard round substance, which if not disturbed, will gradually increase until perhaps it attains the size above named.

For some time at first, its growth goes on *beneath* the skin of the part affected, but as the tumour increases, the skin is so pressed upon that it becomes absorbed, and the Angleberry being liberated not only grows more rapidly, but its surface speedily presents an altered appearance; it becomes divided into clefts or fissures, and the surfaces separated by the clefts not unfrequently present a cauliflower-like appearance, from which blood occasionally exudes, or purulent matter is secreted.

When Angleberries arrive at this stage of their growth, they present a disgusting appearance to the observer; and in summer, unless they are removed, the flies will prove intolerably annoying to the poor animal.

Cause.—The cause of Angleberries is a question which appears to be involved in a great deal of obscurity. Hereditary predisposition is certainly one cause. I know a draught mare which has had several foals, every one of which is or has been affected with Angleberries, and that too in those localities of the skin corresponding to where the mare was affected.

They arise from the deeper seated tissues of the skin, and the probability is, that these diseased or wart-like excrescences arise from some peculiar derangement within the nutritive vessels of the skin; that is, instead of the nutritive vessels producing skin, these growths are produced instead.

Manner of their Growth.—An ordinary observer would readily conclude that growths of this kind essentially consist of an extension of the skin. Such is not the fact. In numerous instances they possess a short pedicle or stalk, from which the tumour is suspended; in other cases, they appear as if they grew immediately out of the skin. Their attachment, however, either to a stalk or to the skin, is *mediate* merely. Angleberries grow by *imbition; i.e.*, they do not receive their nutritive blood from vessels passing *direct* out of the skin into the tumour, but by imbition, or in a manner precisely similar to what the membranes of the fœtus receive blood from the cotyledons of the uterus.

Treatment.—In numerous instances when the Angleberries are small (or when large, if not suspended from a pedicle or stalk) they may be easily separated from the skin by the hand. The operator should firmly seize hold of their substance, and pull them away by sheer force. When the growth is small, and this method is pursued, the Angleberries will frequently slip out of the skin as a ripe nut slips from its husk. The larger masses occasionally require a greater force to remove

them. Perhaps the best way to do is to both twist and pull them at the same moment.

Where the growth is suspended, in the manner as above described, the pedicle should be removed with the knife. To do so, the horse should be cast and secured. The tumour should then be firmly seized by the left hand, and pulled from the skin, so as to lift the skin from its sub-tissues; the stalk is then to be carefully cut away, together with as much of the dermal textures as may be necessary to enable the operator to destroy the tissues whence the Angleberry originates.

It is seldom, however, that even this method, complete as it may appear, will of itself thoroughly eradicate every germ of the malady. I have, under such circumstances, again and again witnessed a return of the disease in the same part.

In addition to removing these growths with the knife, or separating them by force with the fingers from the skin, the matrix requires in every case to be freely dressed with a powerful escharotic, and the best for this purpose is Nitric Acid. In certain cases, or where the matrix of the growth is extensive, it may be necessary to apply the acid twice or even three times in succession, at intervals of twenty or thirty hours between each dressing.

In cases, however, where these growths are present upon the eyelids, or upon the sides of the face or nostrils, strong Iodine Ointment will prove the safest: Acid, if applied here, might prove dangerous to the eyes of the patient. The Iodine Ointment is to be made as follows, and a small portion to be rubbed upon the sores three or four times daily.

Iodine	...	...	...	1 drachm.
Lard	...	...	...	1 ounce.

The Iodine to be powdered, then thoroughly mixed with the lard, and it is ready for use.

The best remedies for internal use are Arsenicum 2, and Sulphur 1. Use these medicines in the same proportions, and as directed at page 211.

RINGWORM.

Ringworm is a malady of the skin which occasionally prevails somewhat extensively.

The disease is generally manifested upon horses during the summer months of the year; and from the manner of its appearance, I am of opinion that it arises from causes of an endemic nature. The facts which have led me to form this opinion, I will briefly state. At times I have been three years in succession without seeing a case of the disease; then a solitary one would be brought for treatment, which upon every occasion of the kind would be speedily followed in rapid succession by numbers of others from various parts of the country: after which, the disease would suddenly cease and not be seen by me again, for at least a similar period of time to what I have stated. This peculiarity, in connection with its appearance I have on several occasions observed, and has led me to the opinion that Ringworm is an endemic disease.

Symptoms.—The symptoms of Ringworm will be illustrated the best by detailing the appearances presented by an individual case of the disease.

I.—Existing here and there upon the skin of the animal, are a number of round spots. They are present on both sides of the neck, and upon the left cheek;—also upon the sides of the shoulders; upon the back, in the region of the lumbar vertebræ; and upon the hind quarters. Each of these spots is about the size of a shilling.

II.—The appearances which these spots present are peculiar. Some are round, others are of an irregular form. The hair in connection with them is of a dirty grey colour; the spots appear, in fact, as though they had been dusted with fine grey-coloured powder, and afterwards a gummy fluid dropt amongst it, and there allowed to remain until the whole became dry and encrusted.

III.—If I place my forefinger firmly upon one of these encrustations, the crust is readily forced aside, and a raw surface is exposed, which upon examination with a common magnifying lens I find to consist of a number of minute pits or cavities, many of which are filled with purulent matter; while running round the border of each of these cavities is a delicate red line of variable thickness.

The symptoms as described above are such as will be found peculiar to every case of the disease.

The Pathognomic Symptoms are *the circular form of the sores*, and *the raw surfaces which are exposed to view when the crusts are removed.*

Treatment.—Ringworm, like Mange, requires to be treated topically. The disease is not difficult to cure. The best topical applicants in general are,—Iodine and the Liquor Arsenicalis.

Iodine.—The Iodine may be applied either in the form of tincture or as ointment. If the tincture is used—first remove the encrustations, then apply the remedy by means of a camel-hair pencil. The sores should be painted with the drug, at least twice a day, for several days in succession. The ointment should be made as follows :—

Iodine	...	...	...	1 drachm
Lard	...	...	...	1 oz.

Prepare the Iodine and mix it with the lard as directed at page 214.

Liquor Arsenicalis.—It is sometimes necessary to apply a preparation of Arsenic for the cure of this malady; and one of the most favourable for this purpose is the Liquor Arsenicalis. It may be applied as I have directed the Tincture of Iodine to be applied.

Sulphur 1 and Arsenicum 2 are the best remedies for internal use. Give the Sulphur in 2-drachm doses, every morning for several mornings in succession, as directed at pages 145 and 146. The Arsenicum may be given for a like period every night. Two drachms of the 2nd will be sufficient for a dose, which mix with water before it is administered.

HAIR CYSTS.

Cysts of Hair embedded within the skin, are occasionally met with in veterinary practice. I have been so fortunate as to have seen and treated several cases of this kind: disease it can scarcely be denominated—it is rather to be regarded as a freak of nature than otherwise.

The only certain mode by which growths of this nature can be demonstrated, is by opening the Cyst, and laying bare its contents. The first case of this nature which came under my notice, was that of a young grey draught horse. The Cyst was present upon the left shoulder. The animal was four years of age, and for three years prior to the case being submitted to my inspection, a small soft tumour was observed upon the part named, which gradually increased until it reached its present size, viz., that of a small pear.

Upon opening the tumour, a grey-coloured mucus-like fluid escaped, and this exposed to view a quantity of long hair, a portion of which was of a black colour, and another portion

white. The black hair presented the appearance as though it had been compressed closely together, and afterwards thrust into the Cyst, while the white hair appeared as though it had been carefully twisted into small circles and deposited within. Both the black and the white hair was completely free from any direct attachment to the Cyst. Many of the hairs measured six inches in length. It had evidently grown from the surface of the Cyst, and been regularly cast. Upon removing the white hair from the sac, it took on a beautiful spiral curl. The black hair was thickly covered with small particles of a grease-like substance. The white hair was perfectly free from any such outward deposit.

From the inner surface of the Cyst white and black hair was growing in abundance; this inner surface was of a delicate pinkish-white colour, and appeared to be free from all traces of a cuticle.

The other cases I have met with were precisely similar in character to the above. In every instance the Cyst was carefully removed, and the structures injured by the operation were treated as a common wound.

Section III.

DISEASES OF THE ORGANS OF RESPIRATION.

CATARRH.
TYPHOID PNEUMONIA.
LARYNGITIS.
BRONCHITIS.
THICK WIND.
PLEURISY.
COUGH.
HAY ASTHMA.
EPIZOOTIC CATARRH.
OZENA.
SPASM OF THE LARYNX.
PNEUMONIA.
ROARING.
PLEURODYNIA.
CHRONIC COUGH.
BROKEN WIND.

PRELIMINARY REMARKS.

After the consideration of the diseases embraced within the present section, the reader will doubtless experience great difficulty in perceiving that clear line of demarcation, which might naturally be supposed to exist between one malady and another, affecting the same class of organs. Several of the diseases in question bear a close *general* resemblance to each other, and not unfrequently one imperceptibly terminates in another of a similar but more severe character. Two, or even three of these diseases may affect the patient at the same time; so that, to the inexperienced observer, the whole may present an assemblage of peculiarities of the most inextricable confusion.

Inflammation of the Lungs, Bronchitis, Pleurisy, and other inflammatory diseases of the respiratory organs, *may* exist, each in a pure and distinct form; but cases of this nature, comparatively speaking, are rare: therefore, in treating upon one disease, I am compelled, to a certain extent, to generalize my statements; and hence the difficulty to the amateur in obtaining that clearness so desirable upon the matter. Be it remembered, however, that the difficulties are not of my creating; they exist in the subject itself. I do not write to mystify, but, if possible, to make clear.

The class of organs known as the respiratory are varied in character, highly vascular, complex in structure, and fulfil a duty in the animal economy of at least equal importance to any other class of organs engaged in the maintenance of the life of the horse.

The organs proper and subsidiary to this class are, the nasal passages, the larynx, the trachea, the bronchial tubes, and the lungs; also, the bony apparatus of the chest, which comprises the ribs situated laterally; the sternum, or the breast bone situated anteriorily; and a portion of the spinal column situated superiorily; also the muscles, which chiefly consist of the intercostals, or the muscles of the ribs, and the diaphragm; also the respiratory nerves, the principal of which are the *par vaga*, or the eighth pair.

Every one of the organs enumerated is subject to various forms of disease, many of which are of a violent and dangerous character.

The nasal passages are frequently the seat of Catarrh; occasionally of a disease called Ozena (an affection not hitherto properly treated upon), and which I hope, in the course of the present section, to describe intelligibly to the reader; also of Glanders, Polipi, and of Epistaxis, or bleeding of the nose.

The larynx is occasionally the seat of Laryngitis, Spasm of the Larynx, Atrophy of its muscles, which latter is productive of Roaring. It is also liable to Ossification, Abscess, and to Stricture of the organ.

The mucous tissues of the trachea are subject to Inflammation both of an acute and chronic character, and to the formation of Abscess within its structures.

The bronchial tubes are subject to a disease called Bronchitis, both of an acute and chronic form; also to Spasm of the smaller tubes or air cells, and to the formation of Abscess.

The structures of the lungs are subject to Inflammation, to the formation of Abscess, to Tubercle, to Broken Wind, and to Thick Wind; also to rupture of the blood-vessels, and to melanotic deposits.

The diaphragm is liable to Spasm, and to Rupture of its tissues.

The pleura is subject to acute Inflammation, of a form which is exceedingly prone to effusion of serum and lymph.

The ribs are liable to Fracture, and to injuries of greater or less severity.

Many of the above-named diseases are essentially similar in character, the difference in name arising merely from the difference in the locality in which they are manifested; as, for example, Laryngitis, Tracheitis, and Bronchitis, which are simply inflammatory affections of the mucous membrane—a membrane alike common to the larynx, the trachea, and the bronchial tubes. It extends, in fact, from the commencement of the nasal openings to the utmost limit of the bronchial tubes.

Some of the diseases enumerated are far more common than others affecting the same tissues. Catarrh is more common than Ozena; Bronchitis more so than local Inflammation of the trachea, ending in Abscess. The latter is more likely

to be productive of a fatal result to the animal, simply from the difficulty of determining its precise seat, or even being at all certain of its existence.

CATARRH.

One of the common affections to which horses are subject is that of Catarrh, or common cold. Sometimes it prevails upon a number of horses, over a large extent of country, when it is denominated *Influenza*, or *Epizootic Catarrh;* but when it occurs locally, and in isolated instances, it is denominated *Common Cold, Catarrh, Catarrhal Fever*, etc.

Symptoms.— Common Cold generally localises its effects in the head, or windpipe, or chest. The animal is feverish; he readily perspires upon slight exertion. The pulse is altered, generally beating from fifty to sixty per minute, and feeble: occasionally it will reach even as high as seventy. The breathing is also more or less disturbed; the respirations will vary from fifteen to thirty times per minute; the breath will be hotter; and the breathing very superficial. The limbs are cold, or they are hot and cold in turns; or sometimes two of the limbs will be cold, and the other two of a feverish heat. The eyes are dull and weeping; the animal dozes and yawns a good deal; he also coughs occasionally, and sneezes, or gives forth a cough and a sneeze at the same time. In some instances the throat is sore, attended with difficulty of swallowing; the appetite is also bad; a watery fluid is discharged from the nostrils, or in many instances semi-fluid of a bluish colour, which either disappears, or towards the end gradually becomes purulent; the urine is high-coloured and scanty; and the dung is voided in small portions, and glazed.

PATHOGNOMONIC SYMPTOMS.—*Occasional chills, pricking of the coat, accompanied with coughing and sneezing.*

CAUSES.—The causes are various. A very common cause is that of over-riding or driving the animal, and then allowing him to stand in a draught of cold air; placing him in a cold, damp stable; turning him out to grass while in a state of perspiration; riding him into water when the system is exhausted; or bringing him from grass and placing him at once in a close, warm, or ill-ventilated stable.

TREATMENT.—Owners of horses, who are observant of what occurs to them, ought to know the premonitory symptoms of Catarrh, and by prompt measures arrest its progress.

The premonitory signs in the generality of cases of Catarrh are, dullness of the eye and countenance; a faint, soft cough, accompanied with slight staring of the hair; and perspiration of the animal upon slight exertion. In many horses the premonitory signs are simply a cough, attended with a slight diminution of the appetite. By attention to the animal during the incipient stages of the disease, hundreds of valuable horses would be annually saved which now die.

The best remedies in general are, Camphor, Aromatic Ammonia, Belladonna, and Nux Vomica.

Camphor, if given during the incipient stage of Catarrh will frequently stop the progress of the disease. Horses which have been severely worked, and at the same time exposed to rain and cold draughts, should always have a small portion of camphor given to them when brought to the stable for the night: it is an excellent preventative, and will amply repay the trouble and cost its administration will entail. Give 2 drachms of the tincture in a glass of weak whiskey and water, or mix it with flour, as directed at page 146.

Aromatic Ammonia.—This medicine is valuable if administered in cases where the disease is attended with debility. Give it in doses of one ounce by measure in eight ounces of cold water. Two or three doses of the remedy may be required; if so, give them at intervals of eight or twelve hours.

Belladonna 1, *Nux Vomica* 1.—Belladonna is useful in Cough. Give 2-drachm doses of the first dilution, in 3 or 4 ounces of water. The dose may be repeated three or four times a day, according to the urgency of the cough.*

Nux Vomica.—Nux is an excellent remedy to restore the appetite. It is also occasionally of value in preventing Catarrh. Give it in 2-drachm doses, mixed in 3 or 4 ounces of water. It may be given in alternation with Belladonna.

Should the weather be severe at the time the disease is manifested, let the patient rest. Keep him warm and comfortable, and diet him according to the rules laid down in Section VI. Should fever be present, give Aconite 1 occasionally. Give it in 2-drachm doses, in 6 or 8 ounces of water. The extremities of the patient should be occasionally fomented with water, as hot as can be comfortably borne by the operator. The fomentation should be continued for fifteen or twenty minutes to each limb; after which rub them perfectly dry, and bandage them with woollen bandages.

EPIZOOTIC CATARRH.

This variety of Catarrh is a disease of a protean character. Sometimes it is particularly marked by the obstinate manner in which a cough will adhere to the animal. At other times it manifests a most uncontrollable tendency to terminate in Scarlatina, or in Typhoid Pneumonia, or in Roaring. It is supposed

* See article "Cough" in the present section.

by many that the liver is very prone, at such times, to be primarily affected—an opinion with which I by no means coincide.

"The *Distemper*, or *Influenza*, as it is sometimes called," says Mr. Blaine, "is singularly prevalent in some seasons, and rages more under some circumstances than others; and though it exhibits general characters in common, yet the epidemic of one year will be marked with some particular symptoms which may not appear in the epidemic of the next. Horses of large cities and crowded towns are more prone to it than those of the country, and than those less confined. Occasionally, however, although the liability to its attack is almost universal among all varieties, yet the young and such as have been lately brought under stable management, are in general observed to be more liable to it than the older and worked horses. The spring months appear particularly favourable to its production; and the prevalence, as already observed, is materially increased by a variable state of the atmosphere, as great and sudden changes from dry to wet, and from heat to cold, and still more certainly if accompanied with a long-continued easterly wind. Now and then it is found to occur in wet autumns also. It has been disputed whether it is contagious or not; and both the negative and affirmative may be maintained. In some seasons it exhibits little or no contagious character; in others it is highly so, particularly among young horses."

Symptoms.—It is stated that Epidemic Catarrh generally commences with the animal having a shivering fit. This, although common at the outset of the disease, does not invariably occur. The disease frequently commences in a very insidious manner. The animal coughs; the respiration becomes hurried; the pulse is feeble, irritable, and easily compressed—

beating from 60 to 70, or from 70 to 80 times per minute; the breath is hot; the mouth is dry, or perhaps preternaturally moist, and offensive to the smell; the membrane within the nostrils is either pallid or of a lead-like hue; the coat will stare; the limbs will be of a variable temperature—two of them cold, and the others preternaturally hot, or hot and cold in patches; and the throat will perhaps be sore. The eyes are either dull and heavy-looking, or the eyelids may present considerable tumefaction, accompanied with a copious flow of hot acrid tears.

As the disease advances, the cough becomes worse, and the throat more sore, attended with swelling at the junction of the head and neck, and within the sub-maxillary space; the appetite may wholly disappear, and the bowels, in consequence, secrete little or nothing; so that the bile, not being required for the digestive and other functions within the economy, becomes absorbed into the system, and the mucous membranes speedily present that yellowness so commonly manifested under the circumstances. If the patient, at this stage of the disease, be made to walk a few yards, he will stagger and sway from side to side, as though likely to fall at every step.

Sometimes a purulent discharge manifests itself from the nose, which is not unfrequently followed by relief to the soreness of the throat; while in others, again, such relief is not so evident. The discharge, however, may in all cases be regarded as a favourable issue. Should the malady be attended with swelling in the region of the throat and within the submaxillary space, such swelling will become larger, and the skin of the part more tender, until matter is fully formed. If every care be taken of the animal, at this stage of the malady, all may pass off well, and leave the patient in the end little or none the worse for the attack; but if improperly treated, or he be-

exposed to cold and damp, or if taken to work too soon, it is highly probable that Scarlatina may supervene, and particularly if other conditions be favourable, and the organism predisposed to its development. In other states, again, little or no discharge from the nostrils is observed. The patient lingers in a most annoying manner. The pulse in spite of everything which may be done, maintains its 60 or 70 beats per minute, while the respirations are perhaps from 20 to 30. This is a condition greatly to be dreaded; not unfrequently it proves to be the first stage of Typhoid Pneumonia, a disease of a most destructive nature, and one which I shall fully treat upon hereafter.

The duration of Epidemic Catarrh, under its most favourable forms, is from four to six days ere convalescence is fully established, when the patient usually presents a more lively aspect. The appetite will improve; the pulse becomes slower; the discharge from the nostrils abundant, and more purulent; the cough looser, more deep, and moist in its sound; the throat less sore; and deglutition is performed more freely, and with less pain. The above changes are generally attended with swelling of the extremities, and a return of the usual habit to lie down and rest.

Pathognomonic Signs.—*The fact of the disease prevailing extensively;* and of its being marked by symptoms *of a character closely similar in every case.*

Causes.—The causes of Epidemic Catarrh have a close relation to the state and peculiarities of the atmosphere and to the season of the year. The prevalence of east winds, or rapid changes in the temperature of the air—such as a hot, close condition being quickly succeeded by a cold, damp, foggy state—is almost certain to be followed by the prevalence of Epizootic Catarrh.

Terminations.—This disease is liable to terminate in Scarlatina, Typhoid Pneumonia, Ozena, and in Roaring. The proneness of the disease to terminate in Scarlatina is greater in summer than during the winter months of the year; while, on the other hand, Typhoid Pneumonia, Ozena, and Roaring are, upon the whole, more common to the latter period.

Treatment.—The treatment of Epizootic Catarrh should vary, in certain essentials, according to the period of its manifestion. If the time of its appearance be in winter, and there prevails a raw, damp, cold state of the atmosphere, warmth and dryness of the stable are highly necessary. If sufficient warmth cannot be otherwise obtained, a crate of red hot cinders should be placed within the apartment, and maintained at the same temperature. Without warmth and comfort to the patient, medicine will prove of little or no avail. It is uncomfortable to the animal to clothe him heavily.

The best remedies in general, for maladies of this nature, are—Belladonna, Mercurius 2, Hepar Sulph. 3, Rhus Toxicodendron 1, Arsenicum 2, Camphor, Aromatic Ammonia, Tinct. Ferri Murias, Poultices, Blisters, and Fomentations.

Belladonna—Mercurius.—These, with Hepar Sulph. and Rhus Toxicodendron are valuable remedies to relieve the soreness of the throat. Sometimes the administration of Belladonna and Mercurius in alternation will speedily remove it; while, in other casee, the Hepar or the Rhus are necessary.

Give the Belladonna and the Mercurius alternately three or or four times a day: the former in 2-drachm doses mixed with water; and the latter (of the 2nd trituration) in drachm doses mixed with flour, as directed at page 146.

Hepar Sulph.—Rhus Tox.—Should the Belladonna and the Mercurius fail, have recourse to the Hepar Sulph. and the Rhus

Toxicodendron. Give the former in 2-drachm doses, the latter in like quantities. Administer them in turns about three or four times a day.

Camphor.—Aromatic Ammonia.—In numerous cases of this disease the heart is involved. This may be known by the irritable state of the pulse, and the peculiar feverish condition of the animal. Camphor is invaluable in such cases. If the patient be of the large, heavy, draught breed, give the remedy in drachm doses, and repeat it twice or three times a day. Give it in powder, mixed with flour, as directed at page 146. For small-sized, light-bred horses, half a drachm will suffice; or, at the most, 2 drachms may be divided into three doses.

The Aromatic Ammonia may be regarded as one of the indispensible remedies. Sometimes it is necessary to administer it at the very onset of the disease. If the patient be aged, and the life powers feeble—if a soft cough be present, attended with soreness of the chest, its use is especially called for. Give it in ounce doses, mixed with 6 or 8 ounces of water. It may either be given alone, or in alternation with Camphor. The necessity for repeating the drug will depend upon the vital state of the patient; its action is that of diffusible stimulant, and as such I strongly recommend it—not only in Epizootic Catarrh, but in most other diseases of a low typhoid nature.

Arsenicum.—Tinct. Ferri Murias.—These remedies are valuable when the patient is convalescent—especially when debility is present, and the appetite is indifferent, and accompanied with swelling of the extremeties. Give the Arsenicum and the Ferri Murias in alternation, twice or three times a day. The former to be administered in 2-drachm doses of the 2rd dilution; the latter, also, in 2-drachm doses, mixed with 6 or 8 ounces of water. It may be necessary to continue these remedies four or five days in succession.

Abscess in the Submaxillary Space.—*Poultices, Blisters, and Fomentations.*—Mild blisters are proper to apply to the neck, and along the course of the trachea, in those cases accompanied with soreness of the throat, and unattended with swelling within the submaxillary space. Mustard is the best for the purpose; it should be applied as directed at pages 159 and 160. If the disease, however, be accompanied with the formation of Abscess within the submaxillary space, a cantharides blister will be the best. It should be limited in its application to the enlargement. It acts by increasing the inflammation within the tissues already inflamed, and thus hastens on the suppurative stage. When the blister has exhausted its effects, recourse should be had to a poultice. The kind of poultice to use, and the mode of its application, are matters fully treated upon at pages 153 and 154.

When the Abscess is ripe, it should be freely opened, and its internal structures broke up by means of the fore-finger. The ripe state of an Abscess is known by its soft elastic feel.

In cases where the mustard does not act so vigorously as desirable, its action may be increased by hot fomentations being applied to the neck. For directions as to the best mode of applying these, see page 156.

Fomenting the limbs is an excellent practice to pursue in the early stages of Epizootic Catarrh. It reduces the general feverishness of the system by the gentle sedative action of the hot water upon it. For proper directions as to the application of the water, see page 156.

Diet.—Full instructions as to the dietetic treatment of diseased horses are given in Section VI., which the reader can peruse. Exercise to the patient is necessary when convalescence is fully established.

SPASM OF THE LARYNX.—The disease is frequently associated with Spasm of the Larynx; this may be known by the loud snoring noise which accompanies every act of inspiration. It is seldom present in these cases, unless a hard enlargement be also present in the submaxillary space. For further information as to the nature and proper treatment of this malady, see article "Spasm of the Larynx," in the present section.

COUGH.—Not unfrequently after the disease is cured, a Cough remains. For further directions respecting its treatment, see article "Cough," in the present section.

TYPHOID PNEUMONIA.

Typhoid Pneumonia is another form of malady which prevails more or less during the existence of Epidemic Catarrh; it may, in fact, be considered as one of the modes in which Epidemic Catarrh is very prone to terminate.

Its appearance is greatly to be dreaded, especially where a number of horses are kept in an improperly ventilated stable; or where the treatment has been of that nature to lower the vital force, such as bleeding, purging, or otherwise depleting the system. It is a disease of a very insidious, and of a very dangerous character. It frequently undermines the whole organism, before an ordinary observer would suspect that anything particular was the matter.

Ausultutation is of great value in this disease, as a mode of determining its existence at the commencement; and the physical signs which mark its approach should not be allowed to pass unheeded.

SYMPTOMS.—Typhoid Pneumonia is generally preceded by Epizootic Catarrh, which affection may have been present for three or four days, or even more; and perhaps to the surprise

of the attendant and those having the care of the animal, no improvement is visible. In spite of everything which may have been done to afford relief, the patient coughs; and there is something in the very sound of the cough which tells an experienced ear the whole history of the change which may have commenced within the chest: it is soft and feeble in its nature; it comes languidly, is constrained, and hangs, as it were, in the throat; the animal, in fact, is evidently afraid to cough, from the acute pain which is experienced during the act. The countenance of the patient is dejected, and the eyes present a dull, inanimate aspect: the limbs may be hot, of only a moderate warmth, or some of them may be warm and others cold. In other cases, if the hand is laid upon one of the limbs, a moderate degree of warmth is felt at first; but if it is retained for a short time, a coldness becomes perceptible, which rises, as it were, from the deeper seated structures of the limb. The membrane lining the nostrils will present a leaden-like hue, or a dirty, dull, bluish colour; the glands beneath the jaws may be a little swollen, and the throat sore; or these symptoms may be absent. The pulse usually beats about 70, or from that to 76 per minute; it is feeble, and easily compressed; or it may appear full, and yet be easily compressed; and perhaps it may have presented these characters for the last four or five days (characters which denote a bad state of the system when they are present for so long a period). In some cases, if the hand be pressed upon the sides of the chest, the skin in immediate contact with it, will exhibit a tremulous motion. The hair over the surface of the body generally will appear dry and penfeathered; the mouth will be offensive; the appetite totally gone, or nearly so, the dung will be dry, or in little lumps like wax balls. The urine will be scanty and high in colour, and emit a powerful odour. The respirations will

probably be from 15 to 20 per minute, and are very superficial; and if the thumb be suddenly forced between the ribs of the chest, the animal will emit a low, suppressed grunt, which may be succeeded by a short fit of coughing. If the ear be applied to the course of the windpipe, a faint mucous râle will probably be detected; while in the chest the respiratory murmur may perhaps be suppressed, or heard but very faintly on one side, and but partly on the other.

CAUSES.—Typhoid Pneumonia never prevails except during the prevalence of Epizootic Catarrh. It is the most malignant and the most fatal in confined, closely-crowded, and ill-ventilated stables. In such stables, this disease generally proves a direful scourge. It is, as previously observed, very deceptive at the commencement: it begins so quickly, and progresses so insidiously.

The ultimate causes of the malady are very obscure. It may be that Epidemic Catarrh is the effect of some noxious atmospheric agent being imbibed into the blood during the respiratory act, whereby the vital fluid becomes contaminated; which contamination, being aided by bad ventilation, overcrowding of the stable, and other influences which depress the vital system, Typhoid Pneumonia results. Whether the above be a true explanation or not, the fact of the disease being the most prevalent and the most fatal in over-crowded and badly-ventilated stables, is sufficient to impress upon every one the necessity of *good ventilation*, and of not crowding too many horses together, especially during the prevalence of epidemic diseases.

COMPLICATIONS.—It is seldom this disease confines its ravages to the organs of the chest alone. In all cases it is associated with Epizootic Catarrh. I have also found it associated with asthenic inflammatory disease of the serous and

mucous membranes of the organism generally. It also occasionally associates itself with a form of disease closely resembling Strangles. This, perhaps, is to be regarded as its most dangerous association, inasmuch as the latter may entirely mask the insidious operations of the former.

When the disease has passed into its more malignant states, the blood speedily becomes loaded with poisonous materials, which the system will imbibe more or less; and those structures requiring the most blood to properly and efficiently continue their healthy function, (and which in themselves are the most vascular), will, as a matter of course, speedily become participators in the morbid change. Thus we frequently find, in this disease, that the patient will exhibit symptoms of abdominal disease of a very low or sub-acute character; the animal will occasionally regard his side anxiously; sometimes he will paw the ground and lie down, and when down he is seldom or ever violent. As the disease becomes more confirmed, the animal is affected with purging, and the fæces are mixed with black semi-fluid blood, from which is emitted a most intolerable stench.

Pathognomonic Symptoms.— *The excessive general debility of the patient; the faint, suffocative cough; the tremulous motion of the skin, and sub-textures covering the chest; the* râles *within the windpipe and bronchial tubes; and, above all, the presence of a peculiar faintly putrid effluvium from the body of the patient.*

Prognosis.—We must be guided in our prognosis by the nature of the attack, by the character of the pulse and the respirations, by the appetite, and the debility. If the attack be mild—if the pulse becomes reduced in the number of its beats, accompanied with a corresponding decrease of the respiratory acts—if the appetite is restored, and the animal lies

down—if the debility disappears—and, finally, if the cough becomes more loose, or the animal coughs freely and without dread, we may hope for the best, and prognosticate accordingly; but if the pulse continue high, the breathing quick, the cough low and suppressed—if symptoms of abdominal disease are present, and particularly if there should be discharged from the nose sanious, yeasty-looking matter of a most offensive nature—if the limbs remain cold in spite of everything done to bring warmth within them—then our prognosis will be unfavourable; for it is more than probable that death will speedily ensue.

Appearances after Death.—The state of the animal after death will, in a great measure, depend upon the intensity and duration of the disease. In the most severe forms of the malady, nearly the whole of the organism will be found more or less gangrenous. The appearances are, disorganisation of the lungs, with large deposits of lymph upon the pleura costalis; effusion of water within the chest, in which masses of lymph, and portions of the lungs and of the pleura, will be found floating about. The pleura will also be gangrenous; it will slough away from the ribs like as much wet paper, leaving exposed a raw surface of a dull, dirty red colour. The mucous and serous structures of the abdomen and also the muscular tissues will be found more or less gangrenous. The great nervous centres will be softened, attended with an effusion of serum within the cavities of the brain, while the nervous substance itself will be of a dirty white colour. The structure of the heart will also be found to have lost its natural firmness, and its cavities to contain blood in a semi-fluid state, and of a black green colour; in fact, scarcely a single structure can be found in a normal state—all appears to be affected with gangrene and disorganisation.

Treatment.—Having determined the existence of the malady, or, what is equally important, the tendency of the organism to take it on, the treatment should be prompt and energetic in character, otherwise the patient will die.

The attendant should carefully regard every circumstance associated with the disease, such as the character of the season; the age and vital condition of the patient. Is the malady an epidemic one? if so, what are its general characters? Is the patient young or old, strong or feeble? Does the disease linger? Is the pulse irritable and feeble? Does the patient breathe hurriedly? Does he cough, and is the cough emitted freely, or is the act restrained, or is the cough soft and feeble? Is the disease associated with the formation of Abscess between the jaws? All the above particulars (and others might be enumerated), the veterinary attendant should be alive to, or the patient may be past the chance of recovery before the existence of the disease is known.

The best remedies, in general, are—Arsenicum 2, Aromatic Ammonia, Chlorate of Potass, Whiskey, and Port Wine.

Arsenicum.—Use the Arsenicum of the 2nd; administer it in 2-drachm doses several times a day.

Chlorate of Potass.—Chlorate of Potass is a salt which contains a large amount of oxygen. I have repeatedly given it in this disease with marked benefit. Give it in 2-drachm doses, mixed with half a pint of water. It may either be given alone, or in alternation with the Arsenicum. If alternated with the latter, its administration will be more frequent; in which case, one drachm of the salt will be sufficient for a dose.

Aromatic Ammonia.—Respecting the use of this drug, see page 229.

Whiskey and Port Wine.—The action of spirits upon the living tissues is not only to stimulate, but also to preserve

the living fibre from change; hence the double value of these remedies in diseases of this nature. By their administration the life force of the patient is roused into full activity; and by its preserving the tissues, the blood is prevented from being loaded with that mass of impurities which it otherwise would be.

The proper quantity to administer will depend upon circumstances. If the patient be a large-sized, heavy draught horse, give half a pint for a dose, and repeat it at least three times a day. Give it each time in a pint of cold water.

Port Wine, on some occasions, not only acts better than Whiskey, but it is also more palatable to the patient. Use it in half-pint doses, mixed with an equal quantity of water. This quantity may be given with advantage three or four times a day, for two or three days in succession.

Diet.—The diet should be highly nutritious. Eggs, Sago, Milk, and Milk and Water, are the articles. In giving them to the patient avoid doing so immediately before or immediately after the administration of Whiskey or Wine. If either of the latter are mixed with eggs, the albumen is coagulated—a consequence to be avoided.

The proper mode of preparing the eggs, is as follows:—break three or four into a basin, add a quarter of an ounce of salt and a pint of cold water, mix the whole thoroughly together, and give the same to the patient. The quantity may be repeated as oft as necessary. Carrots, if in season, will frequently be relished. Bread and milk is another form in which light food may be given. The bread may be boiled in the latter. Suit the taste of the animal. For instructions respecting the housing and the clothing of the patient, see Section VI.

OZENA—[Nasal Gleet].

Ozena* is a disease to which the horse is frequently subject; but one which, strange to say, none of our numerous veterinary writers have, up to the present hour, fully and properly described. Some time ago a Manchester veterinary surgeon wrote an essay upon this malady, which appeared in the *Veterinarian*, for 1857.† The essay in question, is entitled "Thoughts on Nasal Gleet;" and is, perhaps, one of the best articles upon the disease in our literature.

Scores of animals suffering from Ozena bave been condemned as glandered, and destroyed accordingly; and scores of cases of the disease have been cured, and the cures lauded to the world as cures of Glanders. Most practitioners are familiar with the malady in one form or another. It varies in character from that of a simple discharge from one nostril, to that of a most offensive purulent one, attended with ulceration and caries of the bones of the head, together with wasting and general emaciation of the system.

Ozena is a disease which closely resembles Glanders. The same structures are affected in both maladies; and to crown all, if the former be neglected, especially if other circumstances prove favourable, such as bad ventilation of the stable, exposure of the animal to cold and wet, together with a poor diet, it may readily pass into Glanders.

Symptoms.—The existence of Ozena, in the generality of its forms, is usually to be dated from the patient being attacked with common Catarrh, or more especially with Epidemic Catarrh; when the owner will perhaps be surprised to find that

* For a definition of the term *Ozena*, see Glossary.

† Thoughts on Nasal Gleet, by Mr. Thomas Greaves, M.R.C.V.S.—*Veterinarian* for 1857. See pages 254 and 371 of that vol.

after the animal has recovered from Sore Throat, Cough, and the systemic fever so common to both these maladies, a thick muco, or muco-purulent, discharge continues to issue from one nostril, (generally from the left); and that in spite of all treatment of an ordinary kind, the case, if anything, becomes worse.

The animal may cough, or may not. The lymphatic glands in the submaxillary space may be enlarged, or may not; in fact it is seldom they do enlarge, until the disease has been established for several weeks, or even months, in which case they will be tumefied, *but not adherent to the sides of the jaws.* The appetite may be good, or may not; if good, and the animal be liberally fed, he may, in spite of the disease, continue to improve in his general condition.

Sometimes the discharge will cease for even weeks at a time; then be renewed, and flow as abundantly as before. Its colour and consistency may also vary considerably; at one time being of a dark yellow—at another thick, white, and like clouted cream. In the generality of cases the discharge stinks excessively, especially in a morning.

In the state as described above, the disease may remain for weeks, months, and even years; or Glanders may supervene, and the patient have to be destroyed in consequence.

Seat of the Disease.—The disease has its seat upon and within the mucous membrane of the nose, among the turbinated bones, and also within and upon the mucous membrane lining the cells of the ethmoid bones.

In health the turbinated bones are very little thicker than ordinary brown paper; they resemble, in fact, hollow tubes made of that material, by twisting the paper upon itself. Their outer surfaces are convex; internally they are concave, and are divided into long parallel tubes and cells, the whole of which

are covered with the mucous membrane common to the mouth and the windpipe, and through which the air passes in its way to the lungs.

The annexed engraving (after a photograph taken from a dissection made by Mr. Greaves, V.S., of Manchester,) will perhaps exhibit the seat of the malady more clearly than I can state it to the reader by the use of words alone.

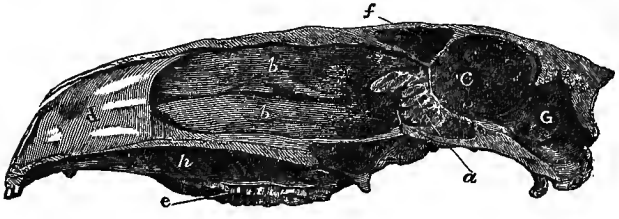


Fig. 18.

Fig. 18 represents a section of the head of the horse. The reader is to suppose the head to have been divided into two halves; and he must also further suppose that he is regarding the inner surface of the *right* half; also, that a considerable portion of the Septum Narium *(d)* has been removed, in order to show the turbinated bones.

a The Ethmoid Bone of the right side of the head, showing the cells or cavities into which it is divided.

bb The superior and inferior Turbinated Bones of the right side.

c The Cranial Cavity wherein the brain is lodged.

d The Septum Narium, or the cartilage which divides the nostrils from each other.

e The Molar Teeth.

f The Frontal Sinus situated at the top of the nose.

g The posterior portion of the Cranial Cavity, where the cerebellum is lodged.

h The Palate, or the roof of the mouth.

The convex surfaces of the superior and inferior turbinated bones of the right side of the head; also the surface of the ethmoid bone, and its numerous cells of the same side, are accurately delineated.

The turbinated bones are situated one above the other, as shown in the engraving. The outer surface of the superior bone is placed in close relation to the inner surface of the nasal bones, and to the frontal sinus *f*. It is *upon* and *within* these structures, we again state, that Ozena has its seat; and it is important to the reader that he should bear in mind the facts we have detailed respecting this, as he will find them of the highest value with regard to the treatment of the malady.

DISEASES WHICH MAY BE MISTAKEN FOR OZENA.—The diseases which may be mistaken for Ozena are—Glanders, Caries of the upper Molar Teeth of the upper jaws, Sinus of the Palate, and Polypus of the Nose.

In every case of Ozena, the teeth of the patient should be examined with the most scrupulous care; and, if found diseased, extracted forthwith.

Inoculating an ass with a portion of matter from the diseased patient was at one time regarded as a decisive test, if the animal experimented upon became Glandered; but the experiments of Professor Spooner and others, have clearly proved that this test is not conclusive.

The existence of a Sinus of the Palate may be known by examination of the mouth, and by the character of the discharge. Is the discharge purulent, or is it mixed with small particles of half-masticated food? Sometimes the discharge arising from Caries of the Molar Teeth may also be of a similar character; while Polypus of the Nose may be determinod either by the presence of the morbid growth, or by the obstruction which it causes to breathing within the affected nostril.*

* For further information with respect to the above diseases, the reader is referred to the several articles in the present volume, which especially treat upon these maladies.

Pathognomonic Proofs of Ozena.—The diagnosis of Ozena is a matter which frequently requires both great care and experience on the part of the practitioner. The symptoms of the disease, if considered singly, are not of a nature directly indicative of the malady. The question can more easily be determined by reference to the symptoms and facts of the case, considered in combination. Of what duration is the disease? and can its existence, in the first instance, be dated from *a severe attack of Catarrh, either in its common or epidemic forms?* Are the lymphatic submaxillary glands enlarged or not? And, if so, *are they loose, or adherent to the jaws?* When adherent to the jaws, the fact is more indicative of the disease being Glanders than Ozena. Does the discharge issue from one nostril or both? and does it occasionally cease, or diminish in quantity? These and other matters which I have directly or indirectly treated upon, should be closely regarded before a satisfactory conclusion can be drawn.

Treatment.—Having satisfactorily determined the nature of the disease, the next and most important consideration is that of its proper treatment and its cause; to secure which, not only is medicine necessary, but, in numerous cases of the kind, aids from surgery also.

The best remedies, in general, are—Calcarea Carbonica 5, Arsenicum 2, Aurum 4, Tinct. China; also, Sulphate of Copper, Biniodide of Copper, Sulphate of Iron, Iodide of Iron, and Muriatic Acid.

The *surgical remedies* are—Trephining and Syringing the nostrils and the cavities of the head.

I have, on several occasions, cured Ozena with two or more of the first-named four remedies given in alternation. Sometimes, however, they are not productive of the least good; but,

when mild remedies and methods fail, we are certainly justified in having recourse to others of a more severe character.

Calcarea Carbonica and Arsenicum.—In those cases where the discharge arises from a sub-acute inflammatory action within the mucous membrane of the nose, Calcarea and Arsenicum generally prove of value; they are remedies which appear to act best if given night and morning, in alternation. Give the Calcarea Carbonica in 2-drachm doses, and the Arsenicum in like quantities.

Aurum, and Tincture of China, are remedies which appear to act best if given alone. Give the Aurum in 2-drachm doses, night and morning, for eight or ten days in succession. Use the Tincture of China in ounce doses, two or three times a day, for eight or ten days in succession; when, if the patient improves from the use of either one remedy or the other, continue it until its action either ceases to have a beneficial effect or until the patient recovers.

Sulphate of Copper, Sulphate of Iron, Biniodide of Copper, and the Iodide of Iron, are remedies which are generally described as tonics; but whether it be strictly correct to so designate them, is a matter of little importance, so far as their curative action relates to the disease in question, which may be summed up in the following manner:—

I.—The action of these drugs upon the living animal, if regarded as a whole, is very similar to each other; but their particular effects are different upon different animals.

II.—Cures of Ozena have followed upon the administration of each of the remedies above named; but the remedy which succeeds in one case of the disease may not produce the least beneficial effect upon another, though to all appearance they are closely similar in every respect.

III.—Neither must it be understood, that one or other of them are certain at all times to cure Ozena. In numerous instances every one of the remedies named may fail.

IV.—The extent to which each of the remedies may require to be used is also a matter of great uncertainty. Sometimes a few doses will cure, as though by magic; while, in other cases of a like nature, the system requires, as it were, to be saturated with the drug before the desired result is obtained: so that much, in every case, will necessarily depend upon the constitutional peculiarities of the patient.

Dose.—The dose in which each drug may be given will depend upon the size and the breed of the patient. If the animal be a large-sized, heavy, draught horse, the Iodide of Iron, the Sulphate of Copper, or the Sulphate of Iron, may each be given in doses varying from 2 to 4 drachms, and repeated once or twice a day, according to the urgency of the case. The Biniodide of Copper will require greater caution in its exhibition; a 2-drachm dose given once a day, or a drachm dose twice a day, will suffice in the generality of cases. Each dose of the latter should be given in half a pint of cold water. The other remedies may either be given in balls, or mixed with water.

Trephining and Syringing.—Cases of Ozena, when of recent origin, may not require to be operated upon. If the case, however, has become chronic, and internal remedies of a proper nature have been resorted to without sucess, the operations of Trephining and Syringing should be resorted to at once. The most direct mode of syringing the top part of the nasal cavity is to trephine into the frontal sinus (see *f*, *Figure* 18).

The opening made by the trephine should be an inch in diameter. Sometimes, however, success is best attained by forcing the fluid up the nostril from the natural opening at the bottom.

The Syringe used for the purpose should not hold less than half a pint of liquid; and it should also be provided with a pipe six or eight inches long, made of india-rubber, or of a strong, soft, and flexible material of another kind. This should be passed up the nostril with the greatest care; otherwise the turbinated structures and their investing mucous membrane may be torn or otherwise injured to an extent not easily remedied.

Amongst the best fluids to inject are—Cold Water, Tincture of Iodine, Tincture of Myrrh and Aloes, and Chloride of Zinc.

Cold Water.—The free injection of Cold Water will occasionally prove of signal benefit. Its action in such cases, should always be tried before fluids of any other kind are used.

Tincture of Iodine frequently proves of great benefit. If resorted to, use it in the proportion of 6 drachms of the Tincture to a pint of Water.

Chloride of Zinc.—Use this remedy in the proportion of 1 drachm of the Salt to 12 or 14 ounces of Water.

Tincture of Myrrh and Aloes.—Use this remedy in the proportion of 1 ounce of the Tincture to 3 or 4 ounces of Water. Its effects, when injected up the nostril, is not only that of a stimulant upon the mucous membrane, but the Myrrh and the Aloes form a sheath upon the parts diseased, which greatly favours recovery.

Diet.—The Diet of the patient ought to be generous. Beans, Oats, Malt, Bran, and good Hay should form the daily

food. The animal should be daily exercised (weather permitting). If the appetite fails, discontinue all medicine for a time; otherwise bad consequences may ensue.

One evil, amongst others, to be guarded against in Ozena (and indeed in the generality of diseases), is that of over treatment. Practitioners may trephine into the frontal sinuses, or into the malar cavities, or inject fluids into the nostrils; until, in the end, the patient becomes ten times worse than at the commencement of the treatment. When this occurs (and it happens more frequently than is suspected) cease for a time all treatment except that of washing the nose with tepid water, and keeping the patient clean; or if the weather be favourable, turn the animal to grass, and allow him a run of two or three months; when, in all probability, he may come up perfectly free from the disease.

Some practitioners recommend Blisters and Setons to the bridge of the nostrils. During my experience I cannot affirm that I have found them of any value.

In conclusion, I may remark, that I consider Trephining of the malar cavities of little or no use beyond evacuating any matter which they may contain.

LARYNGITIS.

(INFLAMMATION OF THE LARYNX.)

Laryngitis is a disease which but rarely exists unconnected with other maladies of the respiratory organs, being generally accompanied either with Epizootic Catarrh, or Bronchitis; nevertheless it occasionally presents itself with such force and clearness as to show that it can, with strict propriety, be classed as a primary disease.

Not unfrequently Laryngitis constitutes the principal feature in Epizootic Catarrh.

Young foals and horses, from two to four years of age, are far more subject to the disease than aged horses.

During the existence of the malady, the patient is liable to be attacked with Spasm of the Larynx. It is also liable to terminate in Roaring, Scarlatina, and Purpura Hæmorrhagica.

Symptoms.—The commencement of the disease is sometimes rapid—at other times slow; and, for a period, its early symptoms are perhaps uncertain. It usually commences, however, by the animal being dull, and affected with a cough, which is short and spasmodic in character. As the malady goes on, the symptoms become more clearly marked. The breathing is accompanied with a rough, snoring kind of noise; swallowing is performed with difficulty; the act of swallowing fluid is attended with a gulping sound, and part of the liquid generally escapes from the nostrils; and sometimes it brings with it either a quantity of glairy mucus or purulent matter. Quantities of half-masticated food are also occasionally returned in the same direction.

The state of the pulse depends upon the severity of the attack; it may vary from 50 to 80 beats per minute, and the respirations from 14 to 20.

The neck, over the region of the larynx, becomes swollen; and if the larynx be even slightly pressed upon, the patient will shrink from the touch with alarm.

As the disease increases in severity, the breathing becomes more difficult; the cough more spasmodic and hacking in character; the snoring sound (accompaning the breathing) more loud and harsh. At this stage, a copious issue of purulent matter from the nostrils will perhaps supervene; and the more violent and alarming symptoms of the case may either disappear or become greatly modified.

In numerous cases, a large Abscess will gradually form within the submaxillary space; which, until ripe, and the contents are evacuated, will increase the severity of the general symptoms.

If the excessive soreness of the larynx does not partly subside within two or three days after the free exit of purulent matter from the nostrils, or after the evacuation of the contents of an abscess within the submaxillary space, Scarlatina may probably supervene.

PATHOGNOMONIC SYMPTOMS.—The Pathognomonic Symptoms of this disease are—*excessive tenderness within the larynx* (which is evinced by the animal on slight outward pressure of the organ), *accompanied with a spasmodic, suffocative cough; the breathing also being attended with snoring and wheezing sounds, which arise within the larynx.*

CAUSES.—Exposure of the animal to cold and wet.

TREATMENT.—The best remedies in general for this disease are, Mercurius, Belladonna, Hepar Sulph. Rhus Toxicodendron; also, Poultices, Fomentations, Steaming the head, Blisters to the neck, and, in numerous instances, the operation of Tracheotomy.

Mercurius, Belladonna, Hepar Sulphurius, and Rhus Toxicodendron.—These medicines are to be used in the manner described at page 228, in the article "Epizootic Catarrh."

Poultices and Fomentations.—These are also to be applied in manner as directed at pages 153 and 156. It will often prove beneficial if the limbs of the patient are fomented in addition to the neck. This practice sooths the system, and affords comfort and quiet to the animal. For directions relating to it, see page 156.

Steaming the Head.— Warm moisture, brought into immediate contact with the mucous membrane of the larynx (a membrane which is naturally delicate and highly sensitive), must prove extremely grateful to patients affected with Laryngitis.

The proper mode of doing it is to obtain a large bag, having only a sufficient width at the top to admit of the lower half of the head of the patient to pass within. Into this bag is placed a hot bran mash, or a quantity of hay upon which boiling water has been poured. The bag is made secure to the patient by a tie passing from its sides over the head, immediately behind the ears. The contents of the bag should be shaken occasionally, to liberate the confined steam.

In preparing the steaming apparatus, attention should be paid to the following particulars: 1st.—The bag ought to be made of coarse material (horse-hair bags are well adapted for this purpose), so as to readily admit the air to pass through its sides. 2nd.—It should be of sufficient length to prevent the nose of the patient from being scalded. 3rd.—The lower third of the bag should be lined with tarred canvass, or some material, to prevent the hot water from escaping. 4th.—The tie which holds the bag to the head should be two inches wide, and made of leather.

Blistering the Neck.—The generality of veterinary authors recommend the neck of the patient to be blistered immediately upon the determination of the disease. To this, however, I demur: it is better to withhold it for a time, except in those cases which are attended with the formation of an Abscess between the lower jaws. In cases of this kind it is proper to apply a blister at once, but only to the part *immediately over the Abscess.* A blister so applied hastens suppuration materially. The disease, in spite of what may be done, will, to a

certain extent, expend its force in a manner peculiar to itself; and all our efforts, for a time at least, to arrest it will only prolong the sufferings of the patient. The proper thing to do is to encourage suppuration from the surface of the inflamed membrane, by means of poultices and fomentations to the neck, by steaming the head, by attention to the wants and the comforts of the patient, and by the administration of one or more of the remedies named above; but if the free discharge of purulent matter fails to afford relief, then is the time, in the generality of cases, to apply a blister to the region of the disease. I have known a blister, when thus applied, to produce in a few hours a marked relief to the patient, and also to lessen the discharge from the nostrils more than one-half.*

Tracheotomy.—Tracheotomy is an operation which, in Laryngitis, should be more frequently performed than it usually is. I believe if it were so, that many valuable animals would be preserved from Roaring. When the disease is violent, as will be evinced by the suffocative character of the cough, and the snoring noise which attends the breathing, the operation should be performed forthwith.

DIET.—The diet of the patient ought to consist of Bran, Sago and Milk, Milk and Bread; the drink of Acidulated Water, or Barley Water, or Milk and Water. If the animal should become much debilitated, Port Wine or Aromatic Am-

* Blisters are applied to the neck in these cases, evidently for the purpose of arresting the disease, *i.e.* to check it from going to the suppurative stage; but this a blister seldom effects. It is very rare to see a genuine case of Laryngitis but what does advance to the suppurative stage; so that, to apply a blister to check suppuration, is inflicting useless torture upon the patient. If applied, however, when suppuration is fully established, a blister then acts by drawing the blood, as it were, from the structures inflamed to those affected by the irritant, and so relieves the congested condition of the former.

monia are the best stimulants to use. In addition to a careful attention to diet, cleanliness, warmth, and dryness are especially essential to the patient in this disease.

SPASM OF THE LARYNX.

Spasm of the Larynx is altogether a secondary affection; and may, with every propriety, be regarded as one of those sequences of a dangerous character which are so greatly to be dreaded, and especially to be guarded against during the existence of Laryngitis or Strangles.

Symptoms.—The symptoms of Laryngeal Spasm are of so evident a nature as to declare the true character of the affection in the most decisive manner. Sometimes the Spasm manifests itself in a moment, and that too with terrible severity. The animal gasps for breath; the eyeballs protrude; the eyes present a wild, staring appearance; the nostrils are dilated to their utmost extent; the nose is protruded; the flanks heave with excessive violence; and, during the act of inspiration, a sound is heard which will vary in character and intensity according to the vigour of the Spasm. Sometimes this sound will be loud and shrill; sometimes a kind of scream; at other times like a loud twang from a trumpet, or it will be rasping, or snoring, or like that elicited from sawing wood.

As the disease proceeds, the general symptoms become more violent; the mucous membranes of the mouth and nostrils assume a purple colour; the animal becomes partly unconscious; he rushes wildly from place to place, as though seeking for aid; the body becomes suffused with a steaming perspiration; until at last the spasm is either spontaneously relieved (which is very rarely the case), or the animal falls heavily to the ground, struggles a few moments, and dies completely asphyxiated.

If the affection supervenes upon an inflammatory attack of the larynx, the symptoms in such a case will most probably be of a milder character. A partial spasm of the organ will exist, which may exhibit such a degree of violence as to excite alarm; and then the whole may gradually subside, and leave the patient in a very tranquil state. In a short time, however (perhaps in two or three hours, or less, according to circumstances), it again commences, and continues for a longer period; or it goes on increasing in violence, until either relief is afforded surgically, or the patient dies.

Pathognomonic Symptoms.—*The act of inspiration is accompanied with snoring, rasping, sawing, or trumpet-like sounds.*

Causes.—The causes of Laryngeal Spasm are numerous and varied. It arises most frequently from Laryngitis or Strangles. It may also arise from the presence of a Tumour at the base of the tongue;* from the formation of an Abscess in the mucous tissues contiguous to the larynx;† from the presence of an Abscess at the lower end of the trachea;‡ from choking; also from the formation of an Abscess at the junction of the head and the neck (this is a frequent cause in young foals). In some instances the affection may arise without any cause that can be detected.§

Treatment.—In any disease that treatment is best which affords the most speedy and direct relief. If the spasm be violent, or of that character which threatens the life of the

* See *Veterinarian* for 1843, page 68. † *Ibid.* for 1845, page 552.
‡ *Ibid.* for 1849, page 392; and also for 1850, page 423.
§ See *Veterinary Record*, vol. vi., page 42.

animal, have recourse at once to Tracheotomy; it will immediately alleviate the condition of the patient, and afford time for the application of other measures. If the affection proceeds from Laryngitis, Strangles, or Abscess of the neck, or of the lymphatic submaxillary glands, treat the patient afterwards according to the principles laid down in the present volume, with regard to the diseases in question.

Where the spasm, however, *arises from hidden causes*, a careful examination should be made to ascertain their nature. The interior of the mouth should be explored for Tumours, Abscess, or the lodgment of foreign bodies within the mucous membrane. Especial care and attention should be given to the examination of the root of the tongue, the laryngeal opening, and the structures contiguous.

The most puzzling cases to a practitioner are those where the spasm arises from the presence of incipient Abscess, or Abscess situated low down in the trachea. A case of this nature once occurred to the writer of the present treatise; and as it is one of a very instructive character, I refer the reader who may desire to peruse the details, to the *Veterinarian* for 1850, pages 423 to 426.

In the same journal for 1845, page 557, a case of incipient Abscess of the laryngeal region is related by Professor Dick, which is not only of a very rare, but also of a highly interesting character to the professional reader.

BRONCHITIS.

Bronchitis is frequently prevalent as an epidemic disease, or it may exist in a sporadic form. It is seldom, however, that it exists in a pure form, or unassociated with other maladies affecting the structures contiguous to the bronchial tubes. The substance of the lungs—the mucous membrane lining the

windpipe, and the larynx—and also the pleura, or the serous membrane which lines the chest, may all at at the same time be more or less affected.

Symptoms.—The animal for two or three days prior to the disease being acute may be unwell; he may be affected with what is designated a cold; he breathes a little thick; coughs occasionally; is dull, and off his food. In this state he is perhaps taken out of the stable for a time, and during his absence he may be exposed to a cold, damp atmosphere, when, upon returning, all the previously existing symptoms are aggravated, the pulse has risen from perhaps 40 or 45 to 60 or even 70 per minute; and the respirations to 30 or 40. The respiratory sounds are also loud throughout the lungs, a moist kind of rattle, or râle, as it is termed, is present within the windpipe and the bronchial tubes. The surface of the body and the extremities are of a variable temperature—the animal coughs—the cough is peculiar—it is thick, heavy sounding, and moist—the mouth is hot, and generally contains a quantity of thick phlegm-like matter—the eyes are dull—the head is held low—the extremities are variable in temperature—and the patient, during the acute and sub-acute stages of the disease, does not lie down. As the disease proceeds the rattle in the trachea and bronchial tubes becomes louder. Occasionally the mucous rattle is very loud, and the breathing is of a suffocative character; suddenly the animal emits a moist kind of cough, and the loud rattle for a time disappears, only in order to again become evident, and again dispersed in a similar manner.

If the patient does well and is judiciously treated, a flux appears at the nose of a muco-purulent character—the cough becomes clearer in sound, and is emitted more frequently—and the appetite of the patient gradually returns.

In other cases the râle in the windpipe increases; the respiratory murmur gradually ceases throughout the lungs; the cough, from being loose and moist, either disappears, or becomes feeble and constrained; and the pulse beats quicker, and becomes thready in character. The disease in fact has extended to the substance of the lungs, and the chances are that a patient thus affected will die.

Pathognomonic Symptoms.—The pathognomonic symptoms of Bronchitis are, *the presence of mucous* râles *within the windpipe and the bronchial tubes, accompanied with a loud moist cough.*

Terminations.—Bronchitis may terminate in resolution, or a gradual return of the animal to perfect health; or in Pneumonia; or in Chronic Bronchitis; or in Thick Wind; or in Chronic Cough; or in Typhoid Pneumonia. The latter of which is very likely to supervene should Bronchitis prevail as an epizootic. As above stated, it may prevail as an epizootic; but, if it exists in a sporadic form, the causes generally are as follows:—

Causes.—Exposing horses to cold draughts, or to cold and wet at the same time; placing them in cold damp stables, when the system is exhausted; washing the body and limbs with cold water when the animal is exhausted, and leaving them to dry without rubbing or bandaging. In short, any cause which may give rise to Catarrh, may also produce Bronchitis.

Treatment.—The best remedies in general, are—Aconite 1, Bryonia 1, Phosphorus 1, Aromatic Ammonia, Blisters, Fomentations, and Injections.

Aconite and Bryonia.—These are the proper remedies to commence with. Give them in alternation three or four times a day. Use the Aconite of the 1st dilution in 2-drachm doses, mixed with 8 ounces of water. Use the Bryonia of the 1st dilution in 2-drachm doses, mixed with 2 ounces of water. Persevere with these remedies so long as the temperature of the skin is variable, and the pulse remains round and of moderate force; but should the temperature of the patient become reduced, and the pulse higher, irritable, and less round, have recourse to Aromatic Ammonia and Bryonia in alternation. The proper dose of Ammonia will depend upon the size of the patient, and upon its vital condition; from 6 to 8 drachms, however, may be given at once with advantage, mixed with 8 or 10 ounces of water. The dose may be repeated once or twice a day, according to the urgency of the symptoms.

Phosphorus is indicated when the substance of the lungs is affected. If the respirations become more quickened, and the mucous râle louder and the cough more suffocating, give Phosphorus 1, in 2-drachm doses, mixed with 3 or 4 ounces of water, and repeated three or four times a day. It may either be given alone or in alternation with the Aromatic Ammonia or with Bryonia, as the case may require.

Blisters.—Blisters applied to the sides of the chest, also along the course of the windpipe, from the top of the neck down to, and including the breast, will be invaluable in cases of acute bronchial disease. They should be used early, with vigour, and their use persevered in until the parts to which they are applied become sore, and the sub-tissues swollen from the presence of effused serum.

One of the best Blisters for the above purpose is made by mixing mustard of the required consistency, with the common spirits of ammonia. For all necessary instructions relating to

the mixing and the application of the Mustard to cases of this nature, the reader is referred to pages 158 to 160.

Fomentations.—Fomenting the limbs with Hot Water, will, in numerous cases, prove of signal benefit, especially in the more severe forms of Bronchitis. The operation should be daily performed until the recovery of the patient is fairly established. For instructions as to the process, see page 156.

Injections.—Injections are occasionally necessary when the bowels are constipated. Many practitioners advocate the use of Aloes, given in small doses, in these cases. The practice is not a safe one, especially if the malady be of the epizootic form.

DIET.—The diet of the patient should be regulated according to the special and general directions laid down in Section VI., page 108, to which the reader is referred.

AFTER-TREATMENT.—By after-treatment, I mean the proper treatment to pursue when the acute form of the disease may be considered as past, and recovery to have commenced. This in numerous cases will prove a matter involving not only great care, but considerable judgment also, as the state of the patient at this time is not unfrequently critical.

The state in question is usually marked by the appetite being bad; the system feeble, and the cough severe; accompanied by swelling of the limbs, and dropsical effusions within the structures of the sheath and the walls of the abdomen.

Apart from proper hygienic treatment, the best remedies in general for cases of the above character, are,—Arsenicum 2, Belladonna, Tincture of the Muriate of Iron, Capsicum 1, and Sulphur.

Arsenicum 3.—Give Arsenicum 2, in 2-drachm doses, morning, noon, and night, in 2 ounces of water each time. If the

patient improves with its use, continue it until recovery is either fully established or the remedy ceases to have any effect.

Belladonna is the best remedy for the Cough. Give it every night in half-drachm doses of the extract of the drug. Combine it with powdered gentian, and give it as a ball.

Tincture of the Muriate of Iron.—Should the Arsenicum fail to afford benefit, have recourse to the Ferri Murias. Give it night and morning in 2-drachm doses, mixed each time with 6 ounces of water.

Capsicum 1.—Capsicum is an excellent stimulant to administer in cases of this nature. It may be used either alone or in alternation with the Ferri Murias. Give it in 4-drachm doses of the 1st dilution, mixed with 6 or 8 ounces of water.

Sulphur.—Sulphur is a remedy to administer when recovery is all but fully established. Use it in drachm doses of the 1st trituration, one or two doses a day for several days in succession. Give it in flour, as directed at page 146.

Exercise.—The patient will require exercise: this should be managed according to the peculiarity of the season. If the weather be fine and warm, a few hours daily of a run at grass will doubtless prove of signal benefit to the animal. In numerous cases, however, in spite of medicine of every kind, the pulse will remain quicker than natural, and irritable; the appetite feeble, and the patient listless. This is a state which frequently occurs, especially amongst horses naturally delicate in constitution. To persevere in giving the animal medicine, under these circumstances, is to inflict injury; what the patient requires is food, not physic. The food, however, should be of a suitable character; the ordinary kinds are altogether unfit for the purpose: the stomach is too feeble to digest them. Raw Eggs, beat together, and mixed with water, is one of the best forms of diet to meet the requirements of the case with which we

profess to be acquainted. Four eggs at a time may be given, and two doses a day should be allowed for two or three days in succession. Prepare the eggs as follows:—first break them into an empty vessel and beat them thoroughly together, then add to the mass a quarter of an ounce of common salt, and administer the whole to the patient with a small horn. Allow the animal cold water to drink, or if preferred, milk and water.

Give the first dose of eggs in the morning, the second in the evening; and in the middle of the day (for a few days in succession), half-a-pint of port wine, mixed with a like quantity of cold water.

It is better to give the eggs and the wine at separate periods; if mixed together, the wine will coagulate them, and the stomach, in all probability, will be unduly excited in consequence. As the power of the digestive organs improves, boiled barley, or a little malt, or speared corn, or if in season, carrots may be allowed. See Section VI., page 108.

PNEUMONIA.

[INFLAMMATION OF THE LUNGS.]

It is a well known fact, especially to veterinary surgeons of long practical experience, that equine diseases during the last fifteen or twenty years have changed considerably in their general characters. From whatever causes the changes in question have arisen is a matter which is irrelevant to this work; the fact, however, I believe to be a veritable one; and in no other disease is it, perhaps, more evident than in Pneumonia.

Formerly this disease existed, for the most part, in association with what medical writers term a *sthenic* state of the organism:—that is, the powers of life were more vigorous when the animal was affected with the disease than what we find them

to be when the malady exists now. We are also given to understand by the veterinary writers of the period above-named, that the disease prevailed in a purer form than at present; and that its general characters were well marked and easily recognised. Now it but rarely exists in a pure form, being generally associated either with Bronchitis or Pleurisy; or what is of common occurrence, the three are present in the patient at the same time.

As the disease, however, does occasionally present itself in a form more or less decisive, I will endeavour to describe such of its special and general peculiarities as may, by care and close attention on the part of the observer, enable him to diagnose it when present.

Symptoms.—Pneumonia may very properly be described as presenting three well marked stages: 1st—when the disease commences; 2nd—when fully established; and 3rd—its terminating states.

First Stage.—A horse may be affected with what is commonly designated "a cold;" in this state the animal is perhaps ridden or driven a long distance in the cold and wet, and upon returning to his stable he may be found shortly afterwards to shiver, to breathe quicker than ordinary, and the limbs and ears to be cold and damp. He also stands fixedly in one position, and holds his head low.

If the practised ear be applied to the sides of the chest, the respiratory murmur peculiar to health will be found changed; and instead of a soft, gentle murmur, which is not unlike the rustle of silk, a confused humming sound is heard, accompanied with a dry, harsh murmur, which is present within the windpipe and the larger bronchial tubes.

SECOND STAGE.—The second stage of the disease is marked by the symptoms taking on a more determinate character, the humming sound disappears, and is succeeded by a faint mucous rattle, or what M. Laennec denominates "the moist *crepitus rhoncus;*" a sound which can be very closely imitated by placing a painted board before a large fire, and as the paint upon the board rises in blisters, a moist, frizzling sound, may be heard, which is closely similar to the sound in question. The moist rattle may be confined to a small portion of one lung, or it may extend over a large surface, or it may be present in both lungs. Double Pneumonia, however, is not common except in the typhoid forms of the malady; more frequently the affection is limited to one lung. The second stage is also marked by the cough being more frequent, and from its constrained character, it is evident the patient suffers pain, and that too of a severe character.

"The state of the pulse is variable in this disease, according as the parenchyma or the reflected membranes bear the greatest share in the complaint, or as the thoracic cavities are unequally inflamed. It is, however, always quickened, sometimes even to 100 per minute; it is also in most well-marked cases, small and oppressed, the pulmonary congestion preventing the free passage of blood through the right side of the heart. I have, however, occasionally found it full and bounding; dependant, probably, on the membranous attack being greater than the parenchymatous. The horse is seen to now look more anxiously round to his sides; the whole body also seems stiff and sore; elevating the head occasions great pain; he stands fixed, the head extended forward, and the nostrils outstretched."*

THIRD STAGE.—The third stage I consider to be the terminating stage of the disease, the peculiar character of which will

* Blaine's Outlines, 5th Edition.

depend upon the vital state of the organism, and upon the extent of tissue locally affected.

The patient may remain as above described for three or four days, when all the violent symptoms will slowly subside, and the health of the invalid be gradually restored; or the structures diseased may become solid or hepatized, and from the enfeebled state of the system, and the great extent of solidification, death may result.

It is seldom the animal thoroughly recovers after hepatization of the organ is established, especially if it be extensive; in which case the patient either dies, or remains *Thick Winded.*

PATHOGNOMONIC SYMPTOMS.—The Pathognomonic Symptoms are—*the presence of a soft mucous rattle, or what* Laennec *calls the moist crepitus rhoncus, within the lung affected.*

While treating upon the symptoms of the disease, it may prove of advantage to the reader if I enumerate those which are prominent in other maladies of a similar class; and for which Pneumonia may be mistaken.

Pneumonia "may be confounded with Catarrh, Bronchitis, or other phlegmasia of mucous membranes. In Epizootic Catarrh, the extremities do not continue invariably cold; the distress of countenance is not so great; sore throat is commonly present; the breathing, though quickened, is less laborious, and the pulse oppressed. The cough in Catarrh is generally deep, sonorous, and very painful; and a weakness, not corresponding with the violence of the symptoms, is very early seen in the complaint."

"Pneumonia has also been mistaken for *Colic,* from the horse sometimes expressing considerable uneasiness, and often looking round to his sides; but in Colic the horse evinces acute pain, by stamping with his fore feet, or kicking at his belly with

the hinder limbs: by turns he lies down and rolls, and then suddenly rises; while on the contrary, in Pneumonia, he seldom lies down, but stands stupidly quiet, except now and then, when he may look at his flanks; but without any of the impatient indications of pain which Colic forces him to do."

The disease may also be taken for Pleurisy, "but true Pleuritis is seldom, if ever, marked with the oppressed pulse, present in the former; but, on the contrary, with one hard and full, and less increased in frequency. Further distinctions may also be drawn from the pain manifested on pressing the sides of the chest in Pleurisy, and by the twitchings of the fleshy pannicle which covers them."*

TERMINATIONS.—Pneumonia may terminate in resolution, which is the state of all others to be desired. It may also terminate in Schirrosity of the organs, and as a sequence to this, Thick Wind, Chronic Cough, and Disease of the Liver; also, in adhesion of the lungs to the pleura; and in Abscess.

CAUSES.—The causes of Pneumonia are the same as those which produce Catarrh and Bronchitis, which see.

TREATMENT.—The best remedies in general, are Aconite 1, Bryonia 1, Phosphorus 2, Bromine 2, Aromatic Ammonia, and Blistering the sides with mustard.

Aconite 1.—At the commencement of the disease, Aconite and Blisters to the sides should constitute the principal medical treatment of the case. Give the Aconite in 2-drachm doses of the 1st dilution, mixed with 6 or 8 ounces of water, every three or four hours, for three or four days in succession; unless the more violent symptoms should abate, in which case, the medicine should be reduced to about three doses per day.

* Blaine's Outlines of the Veterinary Art, 5th Edition.

Blisters.—The application of mustard blisters to the sides of the chest is essentially necessary. They should be rubbed over a large extent of surface, and freely and repeatedly applied until the skin and sub-tissues become distended with serum.

For instructions relating to mustard blisters, and the modes by which they are to be applied, see pages 158, 159, and 160.

Bryonia 1.—Bryonia is another excellent remedy to use at the commencement of Pneumonia. Use it in 2-drachm doses of the 1st dilution, in 3 or 4 ounces of water each time. It may either be given alone or in alternation with Aconite.

Phosphorus 2.—Phosphorus is a remedy of great value in Pneumonia. Care, however, is necessary in using it: if given in too large doses, it appears to favour hepatization of the lung. The proper time to give it is when the disease is fully established. It may either be administered alone or in association with Bryonia. Give it in 2-drachm doses of the 2nd, or even for delicate horses, of the 3rd dilution, mixed with 3 or 4 ounces of water.

Aromatic Ammonia.—This is a remedy which the practitioner may find necessary at almost every stage of the disease. The proper dose to give will depend upon the breed, size, and vital condition of the patient. See Aromatic Ammonia, remarks upon, page 256.

Diet.—For proper instructions relating to the diet of the patient, see Section VI., page 108.

THICK WIND.—BROKEN WIND.

Thick Wind and Broken Wind are two forms of derangement which in many respects are closely similar to each other.

They cannot in strictness be regarded as diseases; but simply as *effects* dependant for the most part upon causes of a

mechanical nature, which causes in all cases originate in previous disease.

THICK WIND arises from a portion of one or both of the lungs being in a state of permanent solidification: the solidified portions of which constitute a mechanical obstacle to the proper diffusion of air through the air cells of the tissues affected; or in other words, a portion of the lungs being permanently solid, and the organs having the same quantity of labour to perform as when they were perfect, the labour, in consequence, is necessitated to be done with greater rapidity; hence the cause of the animal breathing so quickly, especially when worked severely or driven too fast; also, why the derangement in question is denominated Thick Wind.

The origin of the pulmonary solidification arises in every instance from inflammation having previously affected either the substance of the lungs or the bronchial tubes, or both; and the parts affected are generally towards the posterior and inferior borders of the organs. Sometimes they will be found perfectly solid for four or five inches in breadth immediately above the limits in question.

If the solidified tissues are divided *across* the direction of bronchial tubes, and the divided portions are examined with a microscope of low power, the form of the smaller tubes is readily seen; but their cavities are completely plugged with solid lymph, or a mixture consisting apparently of lymph and mucus.

BROKEN WIND.—The difficulty of breathing, which characterises Broken Wind, originates from an entirely different cause; it arises from what is called Emphysema of the lungs.* or the presence of air between the substance of the lungs and the serous or outer membrane which invests them.

See Glossary.

The annexed diagram will clearly illustrate the phenomena in question:—Let the reader suppose the tube *a* to be the windpipe, and the small tubes *bb* the right and left bronchial tubes passing into *cc*, the right and left lungs: *dd* to be the outer or investing membrane of the lungs, and being in close contact with the same at every part of their surface; while *eeeeee* are dotted lines to show the direction of the lungs *cc* seen beneath this outer or investing membrane.

Now the lungs, as most intelligent people are aware, are light, spongy bodies, containing innumerable passages through which the air freely circulates, and by means of which the purification of the blood within the pulmonary organs is constantly affected. The lungs are also highly elastic bodies, and their outer or investing membrane (membrane *dd*), is likewise so constituted as to be readily adapted to the varying size of the lungs, arising from the inspiration and the expiration of the air. To the reflective reader it will be evident that air passing down the tube *a*, and entering the lungs through the

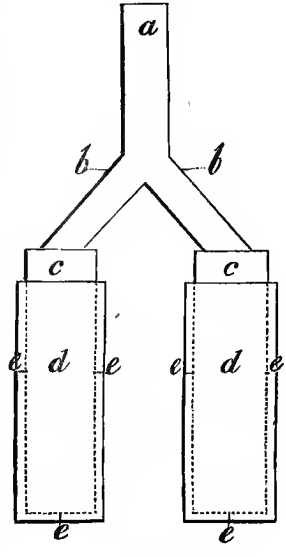


Fig. 19.

A diagram showing the position of the lungs and their outer or investing membrane.

a The Trachea.

bb The right and left bronchial tubes going to.

cc The right and left lungs.

dd The outer or investing membrane of the lungs.

eeeeee Dotted lines showing the direction of the lungs *cc beneath* their investing membrane.

tubes *bb*, that as the former increases in quantity within the air-passages, the latter, being highly elastic, will necessarily increase in volume; and also, that anything which impedes this free expansion will be attended with proportionate distress to the animal. It will also be evident, that if any foreign agent should by accident or otherwise become fixed between the *outer* surfaces of the lungs *cc*, and the *inner* surfaces of their investing membranes *dd*, that according to the volume of this agent and its power of resistance, the expansion of the lungs will to a corresponding extent be prevented. Now this is precisely what occurs in Broken Wind. The walls of one or more of the inumerable air-cells or air-passages within the lungs are injured, either from over-distention or from disease; and the consequence is that air escapes, and is confined *between* the *outer* surface of the lungs and their investing membrane *dd*, and this air not being allowed to return, or to escape in any other direction, presses upon the air-cells below, and by so doing narrows their calibre—thus preventing the organs from expanding to that extent necessary to the health and comfort of the animal. *It is the presence of air between the lungs and the pleura pulmonalis which constitutes Emphysema, and which alone constitutes Broken Wind.*

Numerous causes of a permanent nature, and many of them of an obscure character, occasionally give rise to difficulty of breathing; and very learned veterinary writers endeavour to show that Broken Wind is dependant upon them, and write volumes of *bosh* to prove it; but *true* Broken Wind, we repeat, is dependant upon Emphysema of the Lungs.

Symptoms.—The symptoms of Broken Wind are—difficulty of breathing; the respirations are performed not only more frequently in a given time, but the respiratory act is differently

accomplished. In cases of Broken Wind the ribs are elevated, and the intercostal spaces become plainly visible during the respiratory act. The act, indeed, as Blaine clearly states (although he is in error upon numerous matters respecting the affection), "is made up of *three* efforts instead of *two*. In the first, the air is drawn in naturally, and the flanks fill up as usual; but in the next, the falling of the flanks again to expel the air is most unusual,—for it is not done with a gradual contraction of the muscles, but takes place at once by a momentary effort; and then a third action takes place, which is slow but strong—drawing up the muscles of the belly, as though to press out remaining air."*

In addition to the above, other symptoms characteristic of the affection are present in every case of genuine Emphysema. The animal coughs frequently, and the cough is peculiar; it is compounded of a grunting and a puffing sound, and is short and superficial; while, if the ear be applied to the sides of the chest or to the bottom of the trachea, a moist *crepitus rhoncus* should be readily detected.†

The symptoms of Thick Wind are of a more direct and simple character. In Thick Wind the inspirations and the expirations are equal, but more rapid than normal; and the cough is also loud, hard, and short. In many instances Thick Wind and Broken Wind are associated.

PATHOGNOMONIC SYMPTOMS.—*The peculiar double action of the ribs during the act of respiration, associated with the moist crepitus rhoncus upon the surface of the lungs*, are symptoms clearly pathognomonic of Broken Wind.

CAUSES WHICH AGGRAVATE THICK WIND AND BROKEN WIND.—The causes which agravate the affections now under

* Blaine's Outlines, 5th Ed., 1841. † See the Symptoms of Pneumonia.

consideration are of a numerous character, some of which I shall enumerate, in order to shew how their ill effects may as far as practicable be counteracted.

Amongst the principal of these causes, a thick, close atmosphere; distention of the stomach and bowels, either from feeding too abundantly, or from the animal drinking too much water; also the presence of an abnormal amount of gases within the intestinal canal; also taking the horse to severe work immediately after he has been heartily fed, with perhaps bulky food, are amongst the most common. The two last, indeed, regarded in combination, are causes which on numerous occasions give rise to the immediate death of the animal.

Improper articles of diet constitute another class, the principal of which are—mow-burnt hay, fusty oats, soft beans, and hard water.

FORMS OF DISEASE WHICH MAY BE MISTAKEN FOR THICK WIND AND BROKEN WIND.—The principal of these, and which indeed is not unfrequently mistaken for Thick Wind, is a peculiar state of the respiratory organs often present within their mucous tissues; and which, in the generality of cases, is to be clearly traced to a severe attack of Epizootic Catarrh.

The state in question is characterised by a general debility, manifested not only in the action of the animal, but in the breathing also. The symptoms in many respects are closely similar to those of Thick Wind. The animal blows heavily especially when travelling up a hill, and occasionally looks round to his sides; utters perhaps a faint grunt, or an occasional cough, accompanied with a slight wheezing sound during the act of inspiration.

With respect to Broken Wind, Hay Asthma (a form of disease not previously treated upon in its relation to the horse, but which the reader will find some account of in the present section) is frequently mistaken for it; also derangement of the pulmonary organs, within their mucous tissues, of a chronic character, aggravated by the existence of chronic disease resident within the mucous tissues of the digestive organs. This form of disease is especially characterised by the patient being inordinately thirsty, and when the opportunity offers of drinking an inordinate quantity of cold water. Although the above states are frequently associated in a curable form of disease, yet the latter is sometimes to be observed in association with Broken Wind as well—a close attention to which will materially alleviate the conditions of an emphysematous lungs.

Treatment.—The cure of genuine cases of Thick Wind and Broken Wind is entirely beyond the power of veterinary medicine: nevertheless, medicine of the proper kind judiciously administered, in association with proper hygienic treatment, will at times, if the opportunity be afforded, work changes little short of the marvellous.

The best remedies in general are—Arsenicum 3, Nux Vomica 2, Belladonna 1, Sulphur 1, and Salad or Olive Oil,

Arsenicum 3.—Use this remedy of the 3rd dilution in doses of 2 or 3 drachms, mixed each time with 2 or 3 ounces of water. Sometimes Nux Vomica acts better than the Arsenicum; and sometimes it acts better if used in alternation with the latter. Use the Nux of the 2nd dilution in 2-drachm doses mixed with water.

Sulphur is a remedy to be given at almost any stage of the disease. Use it in drachm doses of the 1st trituration. It may be used either alone or in association with Arsenicum.

Salad or Olive Oil.—Oil is a remedy which on many occasions I have found of temporary benefit in numerous cases of Broken Wind. I have obtained the hint as to the use of oil in this disease from the fact that "Horse Chanters" frequently succeed for a time in allaying the more violent symptoms of Thick and Broken Wind in their horses by giving them a large quantity of oil, or melted hog's lard. Many horses will partake of Olive Oil with avidity, especially if mixed with corn or bran. It may be given to broken-winded horses in doses of 6 or 8 ounces, and repeated once, or upon some occasions twice, a day. Salad Oil is the most expensive, but it is also the most palatable to the patient.

Diet.—The Diet, is the principle matter to be regarded. Avoid giving the animal bulky food; and where the thirst is excessive, have recourse to Bryonia, or Mercurius of the 2nd trituration. The former to be given in 2-drachm, and the latter in drachm doses. Iodine is also an excellent remedy to allay thirst. Give it in 2-drachm doses of the first dilution.

In dieting, the great object is to keep the stomach and bowels free of distention, either from food or flatulence. The mere distention of these organs from the presence of either one or the other is a great mechanical impediment to the free action of the lungs. Attend, therefore, closely to the state of the digestive organs, and if practicable, establish a healthy condition within their mucous tissues, and the breathing will improve, and the patient experience relief in consequence.

Treatment of Anomalous Thick Wind.—With regard to the treatment of Thick Wind of the anomalous form described above, the management of such cases is rarely difficult if attended to with promptness at the commencement. Means should be directed to invigorate the system of the patient. The work of the animal for a time should be light.

The diet should be regulated with every care; good hay and corn allowed in small quantities at a time, and frequently given, will be the right practice to pursue; while medicine, if rightly chosen, will prove an excellent auxiliary. The proper remedies to administer are Arsenicum 3, Iodide of Iron, and Sulphur.

PLEURISY.—PLEURODYNIA.

Pleurisy, or Pleuritis, as the name of the disease implies, is an inflammation of the pleura, or of the delicate but highly vascular membrane which lines the chest, and forms the outer covering to the lungs. It is a disease which frequently exists in a pure form. The horse is also liable to other affections which may be readily mistaken for it. The anomalous forms to which I allude, are sometimes of an inflammatory character, and sometimes merely rheumatic. The difference between Pleurisy and Pleurodynia—the anomalous form in question—can be the best determined by carefully taking into consideration the determining causes of the diseases, and also by auscultating the chest.

Symptoms of Pleurisy.—One of the earliest symptoms which is usually noticed in this disease, is that of the animal emitting a clear, sharp grunt—a symptom particularly evident by turning the patient quickly round in the stall or loose box; this, in many cases, is speedily suceeded by considerable lameness in one or both fore extremities. If present in one limb only, the patient will hold it in a semiflexed position; if in both, he will step with a slow, short, paddling gait.

The generality of cases are marked by the patient becoming worse, or all the symptoms presenting a state of general aggravation. One notable peculiarity is the rapid changes which the

patient manifests. During one hour the heart will beat as low as 45 times, and the respirations will average 12 or 14 per minute, and the attendant will flatter himself that a great improvement has suddenly taken place; but during the next hour the pulse will probably rise to 80, or even 90, and the respirations to 40, or from that to 50 per minute. The surface of the body will also present patches of perspiration; one or two of the limbs will be hot, and the others cold. If the patient be affected with a cough, it will be constrained, and hang, as it were, in the chest. At the sides of the chest, the skin will be thrown into folds. If the disease be limited to one side of the chest (which in some cases it is), this corrugation of the skin will be confined to the side affected. Great tenderness will also be manifested, and the animal will shrink from being handled, or even touched.

If the ear be applied to the sides of the chest, at the commencement of the attack, a sharp friction sound may be readily detected, especially if the patient be a spare, well-bred animal; the sound in question closely resembles that elicited by rubbing the hands together, and it arises from the friction of the lung against the pleura, which is roughened from the inflammatory action going on within the tissues affected. The friction sounds, however, speedily disappear, being succeeded by an almost complete absence of all sound or murmur whatever.

"As the disease advances, the pulse becomes more frequent, small, and wiry—the respiration accelerated—the tongue coated with fur, having a disagreeable odour. If a fuller inspiration be attempted, it is immediately checked, and the grunt at once denotes the pain which the increased expansion of the chest has occasioned. The extension and intensity of the inflammatory action still further limit respiration. The pulse becomes indistinct. The horse paws—is restless; delirium supervenes;

he is up and down frequently, and wanders unconsciously around the box,—till, worn out by the continuance of the disease, he at length falls, and, after short ineffectual efforts to rise, struggles and dies. Should the result prove more fortunate, a marked but gradual abatement of the symptoms, in the most severe cases, is perceived after the fourth day. The abdominal spasm ceases—there is more freedom in the respiration—the pleuritic twitchings do not recur—the grunt is no more heard—the pulse becomes distinct, soft, and less frequent—the body regains its flexibility—the horse moves with more liberty—the appetite returns—he lies down, and gradually recovering is generally within three weeks to be considered well, though unfit for work."*

Pathognomonic Symptoms.—The pathognomonic symptoms of Pleurisy are of a character which, if recognised, place the nature of the disease beyond dispute; they are *the presence at the onset of the disease of frictional sounds, arising from the rubbing of the lungs against the roughened surfaces of the pleura.*

Symptoms of Pleurodynia.—One principal difference between Pleurodynia and Pleurisy is, that in Pleurisy the disease constantly changes from being better at one time to being worse at another. In Pleurodynia the animal moves in a very rigid manner; he steps short and slow—he is dejected—the back is arched—the skin over the surface of the body exhibits tenderness, whether handled roughly or delicately—he grunts a good deal—great tenderness is often present upon one or both sides of the chest, the skin of which presents that state of corrugation I have before spoken of. The respirations are

* Field's Veterinary Records.

short and limited; and the pulse will generally range from 50 to 64 per minute, but on some occasions is not at all disturbed. If the ear be applied to the chest, the murmur can be detected very clearly throughout, particularly in the superior regions of the cavity,—while, if the ear be held close to the lowest part of the inferior region, a sort of rumbling sound is heard; but this latter sound can only be detected when the skin over the part is more tender than elsewhere, and when it is contracted into folds, and moves to and fro behind the ear. This sound I attribute entirely to the tremulous motion which is going on within the sub-textures; for if the ear be kept firmly to the chest, the motion soon ceases, together with the rumbling sound; and providing we remain quiet, and the animal be pacified, we can then distinctly hear the clear, natural, respiratory murmur, though somewhat suppressed, from the constrained manner in which the chest itself is expanded. The hair over the entire body is dry and unthrifty in appearance. If the animal be made to walk up hill, the operation is performed cleverly, but great difficulty is experienced in coming down again; the patient travels as though the feet were acutely inflamed. The appetite is bad in some cases, and moderate in others; the urine is scanty, and the dung is dry-looking; the patient does not lie down, and it is seldom, if ever, that he coughs.

Causes of Pleurisy and Pleurodynia.—The causes of Pleurisy are sometimes epidemical; or the disease may arise from exposing the animal to wet and cold, such as riding him into a stream of cold water at the time he is steaming with perspiration, or allowing him to stand in a cold draught. If the disease prevails epidemically, it occurs for the most part during the hot months of the year.

Pleurodynia arises from similar causes. Young animals are more subject to it than old ones.

DIAGNOSIS.—To diagnose these maladies is a matter of considerable importance. If for no other reason than to know the *fact* that two or more diseases of a similar kind may exist, and the difference between them not known, is of itself a sufficient reason for the practitioner to desire the clearest information upon the question.

When a horse is suffering from disease, it is at all times desirable to know what is the nature, and where is the seat of the malady.

In determining whether the disease be Pleurisy or Pleurodynia carefully attend to the following essentials:—Is the case of recent origin? and if so, does the disease rapidly and frequently change from better to worse? and above all, is there present a *frictional sound* within the chest, the existence of which will at once indicate the malady to be Pleuritis?

TERMINATIONS OF PLEURISY.—Strictly speaking a disease can only terminate in one of two modes, viz:—either in the recovery or in the death of the patient. Pleurisy is stated by the generality of medical writers to terminate in resolution, or recovery; effusion of lymph and serum within the chest; adhesion of the lungs to the pleura; or in the death of the animal. Pleurodynia invariably terminates in the complete recovery of the patient from the disease.

TREATMENT OF PLEURISY.—The treatment of Acute Pleuritis should be prompt and decisive, as it is a disease which is characterised by great severity, and is productive of much suffering to the patient. The best remedies in general, are—Aconite 1, and Bryonia 1; also Blisters to the sides of the chest, and Hot Fomentations.

Aconite and Bryonia.—These remedies, in association with blisters and fomentations to the sides of the chest, will suffice to cure the majority of pleuritic cases. I have cured numbers of cases of the disease with Aconite simply; in the general run of cases, however, the two if given in alternation will prove the best; use them of the 1st dilution, and administer them each in doses of 2 drachms. The Aconite to be mixed with 8 ounces of water, and the Bryonia with 2 ounces. Give them in alternation every three hours for the first twelve or fourteen hours after the beginning of the attack. It is also good practice to administer Aconite alone for two or three times at the commencement of the malady.

Blisters.—If the case be a severe one, have recourse to Mustard Blisters without delay, and the proper rule is to continue their use for three or four times in succession, at intervals of three or four hours between each application, or until a decisive effect is produced. For proper directions as to the mode of preparing the mustard and applying it to the sides, the reader is directed to pages 159 and 160.

Fomentations to the Sides.—Sometimes mustard will not act with any very positive effect until large woollen cloths dipped in hot water have been applied to the sides.

An excellent method to freely apply hot water to the sides, is as follows:—procure a large sized woollen rug, which fold into three, lengthways, stitch the folds together in a rough way; then dip the rug into hot water, then lightly wring it to force out the loose water; then freely sponge the sides of the chest with hot water, and immediately afterwards apply the wet rug in close contact with the same by passing it under and around the body immediately behind the elbows of the patient. Secure the wet rug by means of a dry rug folded in a similar manner to the former, and placed outside of it, the ends of

which may be sewed together; or it may be affected by means of a piece of sacking, having straps and buckles attached to it, as shewn in the present work.*

In the milder forms of Pleurisy, hot fomentations to the sides may suffice without the aid of mustard in addition.

TREATMENT OF PLEURODYNIA.—The treatment best to pursue with regard to this latter disease, is so closely similar to what is recommended for Pleurisy, that I deem little else necessary, than merely to direct the attention of the reader to the principal essentials.

The best remedies in general, are—Aconite 1, Arnica 1, Bryonia 1, and Hot Water Fomentations.

Aconite and Arnica.—Use the Aconite and the Arnica each in 2-drachm doses, and give them alternately; the former each time in 8 ounces of water, and the latter in 2 ounces.

Bryonia.—Bryonia appears to act the best if given when the disease has existed for three or four days. Use it in 2-drachm doses of the 1st dilution, mixed each time with 2 ounces of water; it may either be given alone twice or thrice a day, or in alternation with Aconite or Arnica.

Hot Fomentations.—The application of woollen rugs, steeped in hot water, to the sides of the chest, will prove of essential service. The proper way to do this is described in the preceding page.

DIET.—For every instruction relating to the hygienic treatment of patients affected with Pleuritis or Pleurodynia, see Section VI., page 108.

* See "Article Inflammation of the Bowels," Sect. IV; or, my "Principles and Practice of Veterinary Medicine and Surgery," page 76.

ROARING.

Roaring, like Broken Wind, is not of itself a disease; it is symtomatic of disease resident within certain of the respiratory organs and structures. It is not my intention to enter into any very elaborate details with respect to this peculiarity of a disease. I shall simply consider the most prominent characteristics with regard to it.

Causes of Roaring.—The causes of Roaring are naturally divisible into two classes, viz:—*remote* and *proximate*. The remote causes are those of an hereditary nature, and those which relate to peculiarity of confirmation and to the sex of the animal. It is a well known fact that colts, whose sires were roarers, are frequently affected in a similar manner. Also, that geldings are more frequently affected with Roaring than mares; and that tall, leggy horses, are far more prone to the affection than horses of small but compact stature.

The proximate causes are numerous. Sometimes Roaring can be clearly traced to a severe attack of Laryngitis, or an attack of Common Catarrh, or of Strangles; in other cases it is difficult to assign a direct cause of any kind. To the astonishment perhaps of both owner and everyone having to do with the case, a horse is suddenly discovered to be a roarer, which previously had never been heard to manifest anything of the kind. Horses required for great speed, such as hunters and race horses, are occasionally found to have become roarers in a very sudden, and seemingly inexplicable manner; the cause in all probability, however, depending upon a sudden paralysis of one or more of the laryngeal nerves. I knew a case of a post horse that was once driven as fast as he could be made to gallop for a distance of four miles, and the animal ever after-

wards remained a confirmed roarer. Amongst the principal of the proximate causes I may enumerate:—

I.—*The formation of a false membrane within the trachea.* This is stated to have happened, and the trachea to have been opened, and the false membrane removed, and the animal affected to have been in consequence restored to health. It is much to be regretted, however, that the parties who have treated cases of this nature, have not furnished the public with more ample details with regard to them.

II.—*Hypertrophy and ossification of the arytenoid cartilages.* The most confirmed roarer I ever saw was a case which arose from the cause now stated. The animal was a draught horse, the property of Messrs. Pickfords, carriers. The horse roared at every inspiration when standing at rest.

III.—*Atrophy of the muscles which open one half of the glottis,* principally the arytenoid muscles of one cartilage. "It is, however," says Mr. Spooner, "a matter of dispute whether in these cases the state of the muscles is a cause or a consequence of Roaring. Some contend that the Roaring arises from an affection of the nerves, by which the muscles are thrown out of action, and therefore become absorbed."

IV.—*Pressure upon, or injury of, the recurrent laryngeal nerve.* Anything giving rise to either *active* or *passive* closure of the glottis will cause the animal to roar. In spasm of the larynx a violent roaring sound is the consequence. Irritation applied to the recurrent laryngeal will produce a state of spasm of the organ; while complete annihilation of the nervous power of the recurrent laryngeal, either from

pressure upon the trunk of the nerve or from dividing it, will produce paralysis of the laryngeal muscles, and *passive* closure of the glottis, and roaring as a consequence of the latter; so that here we have examples of states of the larynx of a nature the very opposite to each other, producing effects precisely similar.

V.—*Stricture of one or both nasal passages.* Mr. James Turner, an eminent veterinary surgeon, relates a very instructive case of this kind in the *Veterinarian* for 1849, pp. 14 and 15.

VI.—*Thickening of the mucous membrane of the larynx* is sometimes a cause of Roaring; more frequently, however, it causes a roughness, or wheezing in the breathing.

VII.—*Curvature and ossification of the windpipe arising from tightly reining up the head.* This is not a common cause, especially now that bearing reins have gone so much out of use.

VIII.—*Ulceration of the mucous membrane and other tissues of the larynx.* This is not a common cause. Atrophy of the muscles of one half of the larynx is perhaps of all other causes the most common.

Affections allied to Roaring.—There are other affections of a nature closely allied to Roaring, these are—Wheezing, Piping or Whistling, Grunting, and High Blowing.

Wheezing is a peculiar roughness accompanying the breathing in numbers of horses which have previously suffered from an inflammatory affection of the larynx. It is rarely heard,

unless a horse so affected is made to travel or work with greater quickness than ordinarily.

Whistling is only made evident by putting the animal into a quick pace; a horse may be a Roarer, a Whistler, and a Grunter; or he may be a Roarer and a Whistler; or a Grunter and a Whistler; or he may whistle, and neither roar nor grunt; or he may grunt and neither roar nor whistle; or he may roar and not grunt. I am inclined to believe, however, that Whistling, when not associated with Roaring or Grunting, arises from stricture of one or both nasal passages, produced, in all probability, from a slight thickening of the turbinated bones.

High Blowing is by many considered to be allied to Roaring. It cannot, however, be so classed. It arises from the animal flapping his nostrils in and out of the nasal openings, when made to trot or gallop. It is, I think, more a freak of the animal than anything else. Gallop a horse which does it for a good distance, and at a smart pace, and the sound generally disappears.

Treatment.—The question of the treatment of Roaring is one which is worthy of more attention than what hitherto it appears to have received from the profession. From facts which have recently occurred, and from repeated observations of my own, I am of opinion that many horses may be prevented from becoming Roarers; and also that many horses, considered as inveterate Roarers, may be rendered more useful for numerous purposes.

Preventative Treatment.—Strangles, Laryngitis, Abscess within the sub-maxillary space, or in the hollow of the neck at its junction with the head, and also the presence of a tumour within the hollow of the neck, are one and all well known to

be not unfrequently either remote or proximate causes of Roaring; anything, in fact, which *directly* irritates the glottis, or produces either an *active* or *passive* closure of its opening, may either remotely or proximately cause a horse to become a permanent Roarer.

A tumour situated within the hollow of the neck is generally considered to produce difficult breathing (when such exists), in consequence of pressing upon the trachea, and narrowing the channel within. This is an error; the difficulty which attends the breathing from such a cause, arises in all probability, from the tumour pressing either upon the trunk of the recurrent laryngeal or some of its branches, which pressure induces either complete or incomplete paralysis of the muscles to which this nerve is distributed. The effect is snoring in the breathing, and the presence, to a greater or less extent, as the case may be, of all the attendant symptoms of asphyxia, and, in all probability, of the animal ultimately becoming a Roarer—especially if the pressure upon the recurrent laryngeal be not either speedily removed, or its function for a time completly suspended. The latter is at all times the most practicable; and the way to effect it is by making an artificial opening into the trachea, a few inches below the larynx, and inserting a tube within. The great leagth of the trachea of the horse, and its readiness of access, renders the operation of Bronchotomy a very simple and a very harmless affair. In every case of disease which involves the larynx, and disturbs its function and internal economy, it should be resorted to. It affords, for a time, *complete rest* to the organ; and during that time our undivided attention can be given to the subjugation of the disease, with an internal satisfaction which cannot be experienced by any one depending upon the old method of treatment.

Since the mode now recommended occured to me, I have tried it in many instances, and upon every occasion with success. Whether the animals would have been Roarers if the operation had not been performed, I am unable to say; as it is however, not one has been left either a Wheezer, a Piper, or a Roarer.

PREVENTION OF THE ROARING SOUND.—The plan I shall state for the accomplishment of this, in those horses which are confirmed Roarers, is one lately propounded by Mr. Reeve, veterinary surgeon, of Camberwell. In order, however, that the reader may perfectly understand the nature of the plan in question, it is necessary to state one or two important facts in relation to it. The immediate cause of the roaring sounds is the narrowing of the laryngeal opening; or, in other worrds, the roaring sounds are produced because *a column of air is passing through the nostrils towards the lungs, the diameter of which is greater than can pass directly (or at once), through the opening of the larynx.*

Taking this into consideration, Mr. Reeve "thought it possible," in a case which was submitted to his skill, "to so modify the atmospheric supply to the lungs, that during exercise the volume of air, when it arrived at the glottis, should not exceed that which passed through its opening when the horse was tranquil, and which (from the fact of the sound being absent) does not at that time produce Roaring."

"A strap," he continues, "was accordingly made to pass around the nose of the horse, just over the region of the false nostrils, and buckle beneath the lower jaw. To the inner surface of this strap, and immediately over the false nostril on each side, was fixed a body resembling in shape the half of a hen's egg, cut longitudinally. When applied, these bodies

pressed upon the triangular spaces formed by the apex of the nasal bones and upper jaw, thus closing the false nostrils, and partly diminishing the channel of the true ones." "The result" Mr. Reeve found highly "gratifying; for the patient, which previously could not travel without stopping every few minutes to take breath, now travelled to all appearance without inconvenience or noise. At first the strap seemed slightly to annoy the horse; and whenever it became displaced, the roaring would again commence. A slight modification, however, overcame every difficulty: the strap instead, of being buckled around and under the jaw, was fastened on each side of the bit; and, to prevent its descent, another was carried from its centre, and fastened to the front of the harness-bridle. I am happy to say," concludes the writer, "the effect is all I could have wished: the horse, which previously had been entirely useless, now performs his work in a heavy brougham, and gives great satisfaction. The Roaring is stopped; and with the usual speed, there appears no impediment to respiration. I have paid particular attention to this case, and am inclined to think that, when by the compression we have naturalized the action of the false nostrils, the object is effected without the necessity of further narrowing the nasal passage."*

To conclude, I recommend those who have a roaring horse to test Mr. Reeve's plan; it is both simple and inexpensive. It may not so far improve every case of the kind as to allow of such horses being driven at a rapid pace, but for draught horses it is very likely to prove of great value; and I think Mr. Reeve deserving of thanks for the attention which he has evidently devoted to this subject.

* See *Veterinarian* for 1858, p. 486.

COUGH.—CHRONIC COUGH.

"A Cough is a sonorous and sudden expulsion of air from the lungs, and is well known to be an accompanying symptom of a multiplicity of diseases."*

Horses have almost as great variety of coughs as there are known diseases of the respiratory organs. 1st—there is the loud roaring cough, or cavernous cough, peculiar to horses affected with Roaring. 2nd—the loud, deep, hard rattling cough, peculiar to some forms of Chronic Cough, arising from a portion of the lungs being permanently solid. 3rd—the short, hacking Cough, peculiar to other diseased states of the respiratory and digestive organs, of a chronic character. 4th—the soft, puffing kind of Cough, present in Broken Wind, being generally preceeded by a hard, rough, grunting sound, and accompanied with a sudden escape of flatus at the rectum. 5th—the dull, heavy, moist Cough, peculiar to a patient affected with Pleurisy, or with Typhoid Pneumonia. 6th—the spasmodic, hacking Cough, peculiar to a horse affected with Laryngitis, or into whose larynx a portion of fluid may have fallen during an act of deglutition. 7th—the soft, moist Cough, occasionally emitted by a horse when in a state of chill. 8th—the clear, loud, moist Cough, sometimes heard from horses in health, or at the time they are recovering from the effects of Catarrh, either of a common or epizootic character; so that people who may require to know from a veterinary surgeon what is good "for a oss wot coughs" (no uncommon question), really mean to ask what will cure *that* which causes the cough.

Cough, especially in its chronic forms, differs widely in different horses, as to the conditions under which it is emitted. In some horses it is almost constantly manifest; in others it appears at regular intervals. The Cough is produced in some

* Cooper's Medical Dictionery.

when they are feeding upon hay; in others, when travelling down hill; in others, when newly taken to work; in others, when brought in from work. In cases of the two last mentioned kinds, fits of coughing commence, and may continue with intermission for perhaps more than an hour. In others, the attacks are irregular, days even may elapse without a Cough being heard, when suddenly the animal is seized, without any apparent cause, and for a time will cough in fits of perhaps a minute's duration. In short, the varieties of Cough, both in character of sound and in the conditions of its emission, are endless.

Causes.—The causes of Cough are innumerable; amongst others, I may enumerate Schirrosity of the lungs, from previous attacks of Pneumonia or Bronchitis; thickening of the mucous membrane of the larynx; atrophy of the arytenoid muscles of the larynx; the presence of rough calcareous deposits between the inner surface of the ribs, and the costal surface of the pleura.* Coughs arising from any of these causes are incurable.

The more common causes are—Catarrhs; Irritation in young horses from teething; also Indigestion, arising either from a repletion of food, or from the animal having partaken of improper food.

Treatment.—The best remedies in general are—Dulcamara 1, Camphor, Bryonia 1, Extract of Belladonna, Belladonna 1 and 3; also, Hyoscyamus 1 and 3, and Cupri Sulphur 3.

* I was once talking with Mr. Lawson, veterinary surgeon, Manchester, upon Chronic Cough, and he related a very curious case of the kind. A horse which for years had suffered from Chronic Cough, and which had resisted much treatment to remove it, at last died. The chest and its contents were examined for the cause of the cough, and all that could be discovered was a rough calcareous deposit beneath the pleura, which stretched and elevated the membrane, and against which the lung had suffered irritation.

several other medicines could be enumerated; but as it might only tend to confuse the reader with regard to the proper choice of a drug for any particular case, I forbear to name others. I have found Belladonna to be the best remedy for the general run of coughs, but the quantity necessary to use for a dose varies in a singular manner. Numbers of horses require the extract of the drug in half-drachm doses, and the dose repeating daily for several days in succession, before its effects upon the cough are satisfactory; while to others, 2-drachm doses of the 3rd dilution will remove the violence of the cough, when the extract may have failed to produce the least apparent good.

Bryonia 1.—Bryonia is frequently valuable, if given to coughs of recent origin. Use it of the 1st, and sometimes of the 3rd dilutions; give the remedy in 2-drachm doses at least once a day.

Setons.—Sometimes the passing of a Seton, ten or twelve inches in length, between the outer surface of the windpipe and the inner surface of the skin, in the direction of the long axis of the former, and allowing it to remain for two or three weeks, will prove of signal service.

Diluent Drinks, composed of linseed tea, honey and Spanish juice dissolved and mixed together, will frequently benefit the patient in these cases.

HAY ASTHMA.

I have given to the present disease the name of "Hay Asthma"—not because it holds any very intimate relation to the malady known as Hay Asthma, which effects the human being, but because in the horse it originates in the animal partaking of a peculiar kind of dried grass amongst the fodder which may partly constitute its diet.

Hay Asthma in the human being prevails only during the months of June and July, and is generally supposed to be caused by the effluvium which arises from certain grasses, while in the process of drying and being prepared for hay.

Hay Asthma in horses, on the contrary, is not limited in its manifestation to one or two months of the year; but so far as I have been hitherto enabled to perceive, it is alike common to every month. Neither is it caused by the mere effluvium of the hay, but from a peculiar active principle, resident within one or more of its grasses, and which is liberated and rendered active within the animal by the process of digestion.

The existence of this disease appears to have been not only entirely unknown, but not even suspected by any of our veterinary writers, from the time of old Gervase Markham to the latest authority—viz., Mr. W. Percival. I have treated numbers of cases of this disease, and in numerous instances with perfect success. For a long time I regarded them as cases of Broken Wind, and was sanguine in the belief that I could cure Broken Wind: experience, however, based upon an extensive observation of facts, has led me to perceive that my prior conclusions were erroneous. Broken Wind I hold to be *Emphysema of the Lungs*—a state of these organs which may to some extent allow of being palliated, but which it is utterly beyond the power of medicine to cure.

To contend that Broken Wind is this or that form of disease, and to enumerate a number of states and symptoms which have but a mere resemblance to each other in one or two common features, is to alike confuse the question and the mind of the reader. Let us, where possible, have definite names for diseases and states of the organism, which are clear and expressive to the common sense of every one engaged in the practice of our art.

Symptoms.—The symptoms of Hay Asthma are in many respects similar to those of Broken Wind. The disease is insidious at its commencement, and slow in its progress. The first symptom usually observed is a cough, which at the beginning of the disease is hard and short, and which in time becomes more frequent, and more closely allied to Emphysema of the Lungs. The animal affected may perform his work moderately, and the appetite may not be impaired; but, in spite of a generous diet, the cough remains. The hair is also dry-looking, the skin unthrifty, and the general condition bad.

Sometimes a discharge issues from the nostrils, which differs in colour, and varies in consistency in different cases—being in one instance thin and clear, and in another not unlike thin but well-boiled gruel. In other cases, again, the nostrils remain dry; this is the most uncertain form of the affection to cure, and the most prone to terminate in Emphysema of the Lungs, or in Broken Wind.

If the ear be applied to the chest, a faint blowing sound is heard, which is frequently accompanied by low groaning, creaking, and sibulous râles. In other cases, the air passing through the lungs sounds so peculiarly, that it seems to the auscultator as though it were drawn out of his ear.

In the state as above described the patient may continue for an indefinite time, especially if young, and not properly treated; but if the animal be aged, and the general treatment severe, or relief be not afforded by the administration of suitable medicines, the animal ultimately becomes broken winded, and radically incurable.

Causes.—The causes are connected with the food. Dusty hay is a frequent cause, and one which often acts with rapidity; but whether by deranging the digestive organs, or by acting

directly upon the nerves which are distributed to the stomach and the lungs, I am unable to state. High-dried or mow-burnt hay will also produce it in many instances, especially in those horses which are delicate and well-bred. In other cases, again, I am satisfied that I have traced the cause of the malady to the presence of the grass *Anthox Odoratum*, a figure of which is given in the annexed engraving. I am satisfied of the fact now stated, because of the following reasons:—1st. The effluvium from this grass is well known to produce what is called Hay Asthma in the human being; other kinds of grass are also known occasionally to produce it, but this is the most common cause. 2ndly. On numerous occasions I have found it more than usually abundant in the hay of horses affected with the disease, such hay being, at the time, in all other respects unexceptionable—that is, free from dust or mouldiness, and not mow burnt.

Fig. 20.
Anthox Anthum Odoratum.

While treating upon the causes of this diseased I may allude to the well known fact of hunters being occasionally brought up after a run at grass during the summer months, and pronounced to be broken-winded. The chances however

are, that numbers of these cases are not cases of Broken Wind, but probably some form of the malady now treated upon.

Symptoms pertaining to the state in question have been known to appear in the horse as early even as five or six days after turning the animal to grass; so that the suddenness of the attack, where it may happen, would of itself indicate the disease as not being Broken Wind.

PATHOGNOMONIC PROOFS.—At present I am not aware of any particular symptoms which characterise the disease as being Hay Asthma and no other disease. It is rather to be judged of by inference. *Is the animal young? Can the malady be attributed to bad hay, or to hay containing an abundance of the grass Anthox Odoratum?*

TREATMENT.—The best remedies in general are—Belladonna,* Arsenicum, Lobelia Inflata, and Chloroform.

Belladonna and Arsenicum.—These are remedies of great value in Hay Asthma. I have tested them repeatedly, and generally with good effect. Arsenicum, however, is not applicable to so many forms of the disease as Belladonna. It is not indicated in this disease, unless a discharge exudes from the nostrils; when the nostrils are dry, the remedy will not prove of the least value. Use it in 2-drachm doses of the 3rd dilution, mixed with 2 ounces of water. Use the Belladonna in scruple or half-drachm doses of the extract, which may be mixed with powdered gentian and palm oil, and given to the animal as a ball. These remedies should be given night and morning, in alternation.

*I would recommend a trial of Atropine (the active principle of Belladonna) in these cases. Use it in scruple doses of the 2nd trituration.

Lobelia Inflata.—The value of the tincture of Lobelia as a remedy for asthma in the human subject has been long known; and this led me test its efficacy in Hay Asthma, and in numerous cases I have found it to fully answer my expectations. I have frequently prescribed it in doses of 3 or 4 drachms of the 1st dilution; in some cases, however, it will require to be used in 2-drachm doses of the strong tincture. If used in the diluted form, mix it each time with 2 or 3 ounces of water; if in the strong tincture, mix it with 6 or 8 ounces of water. The Lobelia may be given in alternation, either with extract of Belladonna or with Chloroform.

Chloroform.—Chloroform is another excellent remedy for Hay Asthma. It should be given in 2-drachm doses, *by measure;* and as it requires to be used with more than ordinary care, I shall detail what I have found to be the best mode of preparing and administering it.

First make a quart of thin flour gruel, and while hot, force it through a fine linen cloth; then pour it into a clean glass bottle, and place it aside until cold, and when cold add to the mass 2 ounces, by measure, of Chloroform; then cork the bottle securely, and shake it vigorously for a few seconds, and it is ready for use. Put the mixture in a *dark, cool place*, and keep it there until required. Give an 8th part of the combination for a dose; and give it in alternation with Lobelia, morning, noon, and night. Should the gruel become too thick after standing six or eight hours reduce it to the required consistency with cold water.*

DIET.—The diet of the patient should be strictly examined. The hay should be changed if in the least objectionable, either from being clover hay or from the presence of dust, mouldiness, or the plant *Anthox Odoratum.*

* It is a good plan to prepare the gruel over night.

The water should be soft and sweet; the greater part of the new diet should be cooked and prepared with every care. The patient should not work while under treatment; and when not in the act of feeding, it is best to keep the animal muzzled.

Amongst the various articles of diet which may be named as the most proper, I may enumerate carrots and green clover (if in season), boiled barley, boiled oats, boiled linseed, milk and water, and others. For further particulars respecting the diet, the reader is directed to Section VI., page 108, of the present volume.

Section IV.

DISEASES OF THE ORGANS OF DIGESTION.

DERANGEMENTS AND IRREGULARITIES OF THE TEETH.
WOLF'S TEETH.
LAMPAS.
TYMPANY.
RUPTURE OF THE STOMACH.
COLIC.
ACUTE DIARRHŒA.
SUB-ACUTE AND CHRONIC DIARRHŒA.
CHOKING.
LOSS OF APPETITE.
INDIGESTION.
GORGED STOMACH.
ACUTE INDIGESTION.
GASTRITIS.
ENTERITIS.
SUPERPURGATION.
WORMS.

PRELIMINARY REMARKS.

The digestive apparatus of the horse consists of the mouth and its contents; also of the pharynx and the œsophagus, the stomach, the large and the small intestines, the glandular structures within the intestines, the liver, and the pancreas.

Viewing the apparatus in its most simple form, it may be regarded as a hollow continuous tube, possessed of two openings (the mouth and the anus), one of which is situated at each extremity. In large-sized horses this tube is 94 or 95 feet in length, and of varying capacity.

The tube in question commences at the mouth, a capacious cavity, containing the tongue, the teeth, and the palate. The mouth narrows into the pharynx, and the pharynx into a long, narrow tube, called the œsophagus, the lower end of which suddenly expands into a large space or bag, called the stomach, —which in turn also narrows, and terminates in the intestines, which are divided into the *large* and *small*.

The inner surface of this 95 feet of continuous tubing consists of a fine velvet-like membrane, called the mucous membrane, within whose substance are various structures called glands, the duty of which is to secrete certain fluids necessary to the process of digestion. In addition to the very great number of small apertures opening into the digestive tube in a lateral direction, there are two which I may specially name—one from the liver, called the biliary duct; and the other from the pancreas, called the pancreatic duct.

External to the mucous membraue, but immediately contiguous, is a thin tube of muscle, the fibres of which traverse the bowel in a two-fold manner—viz., one set running in a direction, from the mouth to the tail; and the other in a circular direction, or around the tube of the gut in a spiral fashion. It is by the action of this muscular tube, aided by the nervous system, that the contents of the intestinal canal are forced onwards.

Above this muscular tube, and external to and surrounding it in every part, is the peritoneum, that beautiful pale-blue, glistening membrane, which is at once made visible upon freely exposing the contents of the abdominal cavity.

The intestinal tube and its appendages (the liver and pancreas) constitute in the aggregate what is called the Digestive Organs; they are the structures wherein many substances, by a process of trituration and the action of solvents upon them, are prepared for assimilation to the body of the animal.

The corn and grass eaten by the horse afford material to supply the waste unceasingly going on within the body, but these substances possess an organization prior to their assimilation; but before this takes place it is necessary that their original forms be entirely changed. These solids must be reduced to a liquid state; and to accomplish this, and to aid the body in getting rid of a portion of its worn-out materials, are the special functions and duties of the digestive apparatus.

The molar teeth thoroughly break down and pulverise the harder and more solid portions of the food. The stomach by its motion, and by the solvent properties of the fluids secreted from its mucous membrane, reduces the mass to a liquid. The liver and pancreatic secretions produce other changes of nearly equal importance. After undergoing these processes the digested substances, by the aid of the muscular tissues previously alluded to, are forced onwards, and are thus freely exposed to the absorbent vessels, whose function it is to remove the digested fluids further within the body; beyond which it is not necessary in the present treatise to inquire.

Now, every part of this 95 feet of organised tube is subject to various forms of disease—some being of a simple character; others complicated and virulent; others which are obscure, but which appear to produce a series of derangements in various organs of the body situated remotely from them.

The term Indigestion, for example, is one comprehending much, if viewed in relation to disease in general. The majority of equine maladies treated by veterinary surgeons are, in my opinion, more closely related to an unhealthy condition of the digestive organs than is generally supposed. Veterinary surgeons will do well to bear in mind the remarks contained in pages 174 and 175 of the present treatise.

The *Teeth* are subject to caries; to tooth ache; and to derangement of growth.

The *Pharynx* is subject to inflammation; also to ulceration; to abscess; and occasionally to the growth of tumours within its mucous membrane.

The *Œsophagus* is liable to stricture, and to injuries from choking.

The *Stomach* is subject to a number of diseases, such as Inflammation in its acute, sub-acute, and chronic forms; also to ulceration, debility from atrophy of its structures; and finally, rupture of the organ.

The *Intestines* are subject to inflammation of an acute, sub-acute, and chronic character; to acute, sub-acute, and chronic forms of diarrhœa; to schirrosity of its glandular structures; to irritation of its mucous membrane from the presence of worms; to intestinal strangulation; intussusception of the small intestines; to colic; to the deposition of calculi within its numerous curvatures and cavities. The bowels are also subject to ruptures; the peritoneum to inflammation from injuries either of a direct or indirect character.

The *Liver* is subject to hypertrophy; to fatty degeneration; to inflammation of its substance; to softening and to rupture of its structure, hemorrhage, and death of the animal.

DERANGEMENTS OF THE TEETH.

The lips and teeth are the organs of prehension and mastication. The food which the former seizes upon, the latter pulverizes and triturates; the consequence is, that the latter organs are especially liable to suffer from at least three sources of derangement, and these are—irregularities of growth, injuries of a direct nature, and disease.

IRREGULARITIES OF GROWTH.—This includes a survey of the teeth, under two distinct periods of the life of the animal. The first of these is that comprised in the *early* life of the horse—a period including the time from the birth of the animal until the time at which all the permanent teeth are either completely developed, or in a state rapidly approaching that of complete development. This period may be said to terminate with the end of the fifth year of the horse's age, when the second period may be said to commence, which continues until the death of the animal, be that sooner or later, as accident or design may determine.

FIRST PERIOD.—The principal abnormalities of the teeth, during this period, arise from irregularities in the growth and development of the new and permanent teeth, and in the process which attends the shedding of the temporary or milk ones.

The mouth of the gelding, when five years of age, contains forty permanent teeth. At first, twenty-four of this number (viz., twelve incisors and twelve molars) are developed as temporary organs; but these, at the period named, have all disappeared, and have been replaced by teeth of a permanent class, and of a larger growth. The remaining sixteen of the forty are developed as permanent organs in the first instance. Now the development and shedding of the temporary teeth, and the appearance and the development of the permanent ones, are periods (for the process is both slow and gradual) productive of more or less disturbance to the general health of all young colts and fillies.

Sometimes the permanent molars are delayed in their appearance, and sometimes the temporary molars and incisors are not cast so readily as usual with young animals in general. The first step to be taken with those which may not feed well,

or thrive so well as they ought, is for the veterinarian to make a careful examination of the teeth.

The Symptoms indicative of derangement arising from causes of this nature are—the animal is dull and listless; and, if out at pasture, he strays from his companions, and stands alone for hours in succession, indifferent to everything around him. The teeth are frequently ground, and sometimes he bites the wood-work of the stall or box in which he may be placed. Sometimes the animal will refuse almost any kind of food but oats or hay; and sometimes he will eat so little as to compel those in attendance to force him to partake of food. In other cases, again, the symptoms are of so palpable a character as at once to indicate the derangement. Saliva may dribble from the mouth; and if the jaws be forced apart, a fetid odour may be detected. When the animal is desirous to feed, he eats slowly, and evidently with caution. As the disturbance progresses, an Abscess may appear in the sub-maxilliary space, and the case be treated as one of Strangles. Scores of cases of this kind have been diagnosed for Strangles, and treated as such: examination of the mouth, however, will in all probability lead the observer to detect redness of the gums around one or more of the molar teeth; or one or more of the temporary teeth may be forced into an unnatural position by a permanent tooth growing from beneath.

Treatment.—In order to thoroughly examine a patient so circumstanced, it will frequently prove necessary to cast the animal, and perhaps the best mode to effect this is by Mr. Rarey's plan; after which the teeth may be closely inspected, and such as may be loose, or distorted from irregularity of growth, should be removed with instruments for the purpose;

while the gums, which may probably be red and inflamed, should be freely lanced and scarified. Sometimes the energetic application of a sharp tooth-rasp will remove the shell-like growths of one or more of the temporary molar teeth, the presence of which growth will be sufficient to cause a disturbance to the health of the animal.

Many of these cases are of a puzzling character, especially to young practitioners, who cannot be too cautious before pronouncing an opinion. Certain writers have designated the state in question as that of "*breeding* Strangles"—an opinion by no means very flattering to their practical skill, if by it they mean a peculiar or *specific* fever which terminates in Abscess of the sub-maxillary space.

Should the state of the animal not improve from lancing the gums or removing the temporary teeth, recourse must be had to other means—such as counter-irritation to the cheeks and to the sub-maxillary region. One of the best agents for this purpose is the Biniodide of Mercury mixed with lard, in the proportion of half a drachm of the drug to an ounce of lard. A little of this should be rubbed upon the cheeks, immediately over the fangs of the molar teeth, and also within the sub-maxillary space. The irritant is to be repeated until soreness of the skin is produced.

The best remedies, in general, to administer internally are Sesquichloride of Iron, and Tincture of Capsicum—the former of which may be administered in 2-drachm doses mixed with half a pint of water, and given every morning; and the latter in 2-drachm doses of the 1st dilution, mixed with a like quantity of water, and given every night.

Diet.—The diet should consist of boiled oats and bran, carrots, swede turnips, and hay. Should the animal refuse

soft food, allow small quantities of dry oats, or such food as may be most relished.

SECOND PERIOD.—The derangements of the teeth which I shall next describe are occasionally met with in practice during the first period. It is not that such derangements are specially peculiar to the second, they are only more common to the latter than to the former era.

The principal irregularities in question consist of an abnormal growth of the teeth; decay of their substance which is attended with pain (tooth-ache); and irregularities arising from injury. Of the latter variety I shall not on the present occasion treat upon.

ABNORMAL GROWTHS OF THE TEETH.—The irregularities in question consist principally of an abnormal growth of the teeth in two directions—1st, irregular growth of the teeth *laterally;* and 2nd, undue growth of one or more of the teeth in *length.*

The common symptoms by which derangements of the teeth may be inferred are—dribbling of saliva from the mouth, quidding the hay, hanging down the head, and inability of the animal to properly masticate the food. Inspection of the mouth may lead to detection of irregularities of growth of the teeth laterally, or an undue length of one tooth over the other; or caries of one or more of the teeth; or two or more of these affections may exist at the same time.

In the more aggravated cases of abnormal lateral growth of the teeth, the constant attrition of these projections against the inside of the cheeks produces inflammation and ulceration of the membrane; also swelling of the cheek (in some instances to an enormous extent), and Fistula of the Parotid Duct.

A carious tooth should he extracted forthwith; lateral irregularities of growth should at once be removed with a rasp which is made for the purpose, similar to the one figured in the annexed engraving (*Fig.* 21). In using the tooth rasp, a firm but light hand, together with care, are necessary, otherwise the animal will be very turbulent.

RASPING THE TEETH.—The operation of rasping the teeth is to be performed as follows:—Put a halter upon the head; tie a knot at the noose, allowing plenty of room around the jaws; then turn the animal to be operated upon the reverse way in the stall. Place a steady assistant at the right side, who is gently to open the mouth of the horse and draw the tongue to the right side, and there firmly hold it down to the jaw, until the molar teeth of the left side of the mouth are operated upon. The operator first introduces the tooth-rasp gently into the mouth, placing the hollow groove of the same firmly upon the *outer* edge of the molar teeth of the upper jaw, and, while retaining it there, working the instrument at the same time backward and forwards, until all the protruding points of the teeth are completely removed. The rasp is then placed in a like position upon the lower molar teeth, but upon their *inner* border, and the projecting points removed from them also. The assistant is then to change sides, and secure the tongue firmly down to the *left* side of the mouth, while the operator introduces his rasp as before, and operates as already directed—first upon the upper molar teeth, and upon their *outer* edge, and

lastly upon the lower ones upon their *inner* edge, when the operation may be considered complete. A ball-iron, or gag (see Fig. 15, p. 144) will be necessary to enable the operator to ascertain the state of the teeth after being rasped, and also to ascertain if the projecting point of a tooth may have escaped the action of the file.

Caution Required.—In performing the operation, simple as it may appear, a certain amount of practice is necessary ere it can be well and expeditiously executed. Violence to the animal is to be avoided. The operator should perform his duty firmly, lightly, and neatly. In holding the tongue, for example, it is not necessary for the assistant to drag and pull it out of the mouth as a strong labourer would pull at a rope; all that is necessary is to draw the organ gently to one side, and to press it firmly down to the side of the lower jaw; the object by so doing being to prevent the efforts of the tongue from displacing the rasp. The operator should also be careful to hold the rasp close upon the teeth at the time he is operating, otherwise the gum may be rasped instead. Avoid pushing the instrument too violently backwards; when this is done it strikes against the inside of the cheeks and gums, pain is inflicted, and resistance from the horse is excited in consequence. Many veterinary surgeons place a twitch upon the nose of the patient before operating; it is very rare, however, that I find it necessary, as horses will usually stand quiet, if quietly and gently handled. In all minor operations, the less the animal is restrained, the less resistance, in a general way, will be offered to the intentions of the operator.

Tooth Ache.—*Caries of the Teeth.*—Tooth Ache, and Caries of the Teeth, are not very common affections; and it is only by a careful examination of the mouth that a carious tooth

can be discovered. Instances have occurred, and the facts are recorded, where Caries has extended to the fangs of a molar tooth of a top jaw, and ulcerated through its socket into the nasal chambers above; and matter being discharged out of the nose has given rise to the opinion of the animal so affected being glandered, and afterwards being destroyed in consequence.

The common symptoms of Tooth Ache are—the animal refuses its food, attended with fetor of the mouth; dribbling of saliva from the lips; and swelling of the cheek.

A carious tooth will generally be hollow, and its cavity filled with half-masticated food, the fetor from which will be very offensive. The glands of the sub-maxillary space will also be enlarged, but rarely or ever adherent to the jaw, unless as a consequence of maltreatment. Fetor from the mouth is not at all times indicative of a carious tooth. Sometimes it arises from the corners of the molar teeth being sharp, and lacerating the inner surface of the cheek, and the sores thus produced suppurating; and sometimes it arises from the molar teeth having spaces between them, in which half-masticated hay will collect and so remain, until by its presence the gums become inflamed and purulent matter is exuded. Little or no difficulty need be experienced in detecting a carious tooth; its hollowness, and the fetor of its contents, together with the pain which the animal experiences if a finger of the examiner be forced into its cavity, are all unquestionable proofs of its existence.

Treatment.—The treatment of a carious tooth is a matter readily determined upon: it should be extracted; and in order to do so the patient will need to be cast and turned upon his back, and there retained, by means of large bundles of straw, as long as may be necessary. The operator is then to forcibly open the mouth by means of a ball iron, and while an assistant

secures the tongue, he, by the aid of suitable forceps, if possible, extracts the tooth. Sometimes it is so far decayed as to have become a mere shell, which in grasping with forceps is crushed into fragments, when its further extraction by this mode may be rendered impracticable. In a case of this kind, especially where the animal is valuable, and where the tooth diseased is a top molar one, and where a sinus passes from its aveolar cavity into the nasal cavity above, it then becomes necessary to extract the fangs of the tooth; and this can only be affected by making an opening into the mouth at the side of the cheek—an operation which is difficult to perform, and which is beyond the scope of the present work to treat upon. Should the operator, however, succeed in extracting the tooth as directed above, a difficulty in possibility should also be taken into account, and provided for accordingly. The difficulty I allude to is this:—the opposing tooth of the opposite jaw not having the extracted tooth any longer to contend against, it will in time so increase in length as in the end to prevent mastication. Two modes of dealing with this *possible* difficulty are presented to notice: one is to remove the sound tooth at the time the diseased one is extracted; and the other is to leave it in the mouth, and as it becomes too long, to reduce it from time to time as necessity may require. The choice of these modes, in any case which may happen, I leave to the judgment of the operator, and those to whom the patient may belong.

DIET.—The kind of diet necessary in these cases will be an important matter for consideration. Hay and the coarser varieties of food, if allowed, would probably retard the cure, in consequence of portions being insinuated into the cavity made by extracting the diseased tooth. The diet should therefore (for a time at least) consist of thick gruel, bread and milk,

boiled rice and milk, and occasionally of raw eggs and milk, or raw eggs and water. For further particulars, however, regarding diet, see Section VI., Part 1, page 108 to 117 inclusive.

IRRITATION OF THE INCISORS.—In conclusion, I may remark that the temporary incisors frequently require examination at the periods at which they should be cast. The permanent teeth as they appear do not always completely displace the suckers. The latter are sometimes pushed a little to one side, or the permanent ones make their appearance close to the sides of the other; the consequence is, unless the suckers are forcibly removed, the mouth will present a very unsightly aspect. The appearance of the teeth will at once indicate when the removal of one or more of the suckers is necessary. Few instruments are better adapted for the purpose than a large strong pair of flat-nosed pliers.

WOLF'S TEETH.

Wolf's Teeth are growths respecting which we frequently hear individuals discourse very learnedly. They are a species of small supernumary teeth, partaking in character both of a canine and of a molar tooth; and when present are always found in close contiguity to the first molar teeth of the upper jaw. Grooms and stablemen consider them highly injurious, and attribute to them inflammation of the eyes, indigestion, coughs, and general unthriftiness. So far as my own observations extend, however, I have not found their presence to be productive of either good or harm to the animal possessing them.

When present, and their removal is determined upon, it is affected the best by knocking them out with a light hammer and chisel. The chisel should be 12 or 14 inches long, narrow and deeply serrated at its lower end, so as to admit of being

easily placed upon either the inner or the outer sides of the teeth, and readily retained when placed.

When the operation is to be performed, the animal to be operated upon should be blindfolded, and the head steadied by an experienced assistant.

LAMPAS.

Lampas is an undue growth of the first edge of the palate situated immediately behind the incisor teeth of the anterior jaw. This undue growth of the palate is the most common to horses from the third to the fifth year of their age, and is seldom seen afterwards, simply because in the generality of horses the Lampas have been removed. On some occasions the swelling of the palate at this part is so large as to hang below the teeth, when it is considered, and justly so, an obstructive to both prehension and mastication of the food. Now, whether this swelling be in itself a cause of disturbance within the mouth, or an effect of disturbance from other sources, is a question difficult to satisfactorily determine. To use a phrase of Sir Roger de Coverley "much may be said upon both sides of the question."

Treatment of Lampas.—I frequently receive letters from gentlemen asking me how they are to treat Lampas; whether the swelling is to be burnt out or scarified, or left alone. When burnt out, people cease to think about it; "instead of burning the Lampas," says Mr. Spooner in White's Farriery, "if they would keep the animal entirely on bran mashes for about a week, he would be able to eat his hay and corn with avidity," a recommendation which is simply preposterous. If a horse so affected be in work, what owner will allow him to rest a week for so simple a matter? Lampas are frequently removed with a hot iron, and the animal taken to work immediately afterwards.

If the operation be properly performed, it is far less cruel to the horse than to be regularly scarifying the mouth.

While the operation is being performed the animal should be blindfolded; the jaws should be forced well asunder by fixing in the mouth a gag, consisting of a round piece of wood, 3½ inches diameter and 8 inches long, and held between the jaws by being securely fixed to the head-piece of an old bridle. The iron should have a fine, sharp, cutting edge; it should be applied at a high temperature, and its surface should be free from scales; *the iron should only be applied to that part of the palate which is swollen.*

I do not recommend this operation in every case, but people will do it; and so long as they *will* do it, let it be done as expeditiously and as humanely as possible.

CHOKING.

Choking is not a disease; it is an accident which is very liable to occur to greedy horses at the time of feeding. Choking, although not a disease, yet, if long continued, may cause inflammation of the œsophagus, or stricture within a portion of the canal; or it may cause rupture of the walls of the organ, and other consequences to the animal of a nature not readily obviated.

Symptoms.—The symptoms of Choking are of a nature which readily determine the character of the accident. It occurs at the moment of feeding. The animal suddenly ceases to masticate; he will stamp his fore feet violently, and retreat backwards in the stall. The nose will be projected forwards; the neck forced downwards, or bent forwards; the back is arched; the muscles of the abdomen are forcibly compressed, and the horse attempts to vomit,—and the action is usually

accompanied with a faint squealing noise, and the rising in the hollow of the neck of a large roll-like substance. The effort to vomit is generally terminated by the animal ejecting a quantity of thick mucus from the mouth, when the general spasm of the body subsides, to be again repeated in the course of five or ten minutes, and so on, for perhaps several hours in succession. As the choking state of the animal is prolonged, the flow of mucus from the mouth becomes more abundant. It is seldom, however, that the pulse or the respirations are much disturbed, or that bad consequences of a permanent character result. In the generality of cases, the choking slowly subsides, especially if the patient be aided judiciously. In certain instances, however, relief cannot be obtained without forcing a small probang down the throat of the animal; or the operation of opening the œsophagus may even be necessary for the purpose of removing the accumulation with the hand.

Causes.—The causes of Choking are greedy feeding, or the animal swallowing the food too rapidly; also suddenly striking the horse when in the act of feeding; or from the food being given in too dry a state.

Treatment.—In treating cases of this kind those in attendance should have patience, and for a time at least be content to adopt measures of a simple character. A small quantity of olive oil may be occasionally administered, or a small portion of warm water, or a little thin gruel. The neck should also be stroked gently downwards with the hand.

If the Choking arises from the lodgment of a small potato within the œsophagus, it will, in all probability, prove a more difficult case than if arising from a portion of soft mash or loose dry food.

It is a very common practice to bleed choking horses; but why they are bled, or what good can be effected to them by the operation, is to me a mystery. Ignorant people, when placed in a little power, are always thinking it is necessary to do something; and if they happen to be called in to cases of this nature, in the absence of knowing what else to do, they bleed the patient, and no doubt deem themselves very clever in consequence.

Should the Choking not subside in the course of three or four hours (which it very rarely fails to do—frequently, in fact, much earlier), recourse should be had to the use of the probang.

Numbers of greedy feeding horses are frequently affected with choking; the best preventative of which is to divide the top of the manger into a number of spaces, by means of iron rods stretching across, as directed at page 8.

The food should be given to such animals in small quantities at a time, and thinly spread over the bottom of the manger; and it should also be freely moistened with water before allowing them to eat it.

LOSS OF APPETITE.

Loss of Appetite, although it occurs at times as an indication of derangement of at least some part of the digestive organs of the horse, is more frequently presented as a mere symptom of an acute, sub-acute, or chronic disease. In every acute disease, during its more acute stages at least, Loss of Appetite is to be regarded as all but an inevitable consequence. When present, however, without its cause being palpable, or where little or no general disturbance of the system is evident, it is for those in attendance to investigate the case more closely.

Inability of the animal to eat from some hidden cause of a peculiar nature is sometimes mistaken for Loss of Appetite.

A horse, for instance, may be picking the green leaves from a thorn hedge, and a thorn accidentally becomes embedded in the mucous membrane of the cheek, or into the substance of the tongue; or the animal may be eating corn, and a short nail, dropped by accident into the mass, finds its way into the mouth and becomes forced into the jaw between the gum and the teeth, or into the palate, and inflammation speedily follows, the pain from which is perhaps so excessive as to render the horse unable to masticate; or a wound may exist upon the tongue; or a bad tooth be present; or the teeth are irregularly grown, and have lacerated the mouth so as to render the horse afraid to eat; or it may arise from the animal being overworked, and the system so exhausted that time and rest can alone restore the appetite. In every case then where Loss of Appetite is a prominent matter, and where it may have existed for some time, or where the appetite does not return within a reasonable time, the mouth should be examined, and its contents carefully inspected in every part. To explore the mouth, in fact, is just as necessary in cases of this kind as it is to remove the shoe and examine the foot of a lame horse, ere a positive opinion as to the nature and cause of the lameness can be accurately determined upon.

I am sometimes consulted respecting Loss of Appetite in young animals. Two or more colts of different ages may be running together at pasture, and grass not being abundant, the owner allows them hay and corn daily; but he is surprised to see one or more of the youngest lose flesh, while the others thrive vigorously. Now, in perhaps nineteen cases out of twenty of this kind, the cause, if investigated, will prove obvious. The larger and stronger animals, in all probability, drive the lesser and weaker ones away from the hay and corn. Place such animals, at the time of feeding, in different boxes or feeding compartments, and the unthriftiness of the weaker will soon disappear.

TREATMENT.—It is first necessary, when practicable, to ascertain the cause of the derangement. Where a doubt exists as to whether or not the want of appetite arises from the derangement of the teeth, or the presence of a foreign body, such as a nail or a thorn within the substance of the cheeks or the gums, cast the patient, and examine the buccal cavity and its contents with every care, when if anything of the kind be present it should be extracted forthwith, and the injury afterwards treated as a common wound; or on the other hand, if one or more of the teeth are carious, or their growth be irregular, they should be treated according to the directions given in the article on Derangement of the the Teeth, pages 299 to 304.

The attendant should make enquiries about the work of the patient. Is the animal worked beyond its strength? Is the horse naturally a delicate feeder, or is the regular food deficient in quantity and wholesomeness? Does the person having the care of the horse sell the corn and pocket the proceeds? Instances of this kind have occurred, and veterinary surgeons have been consulted as to why the animal so treated did not thrive.

Any one owning horses which are unthrifty in their general appearance, and who allows them an abundance of wholesome food, will act wisely to ascertain *if the driver of the team keeps a cow or a pig.*

Where Loss of Appetite, however, occurs as a primary condition, the best remedies in general are—Nux Vomica 1, Arsenicum 2, Sesquichloride of Iron, and Tincture of Capsicum 1.

Nux Vomica.—Arsenicum.—Use the Nux in 2-drachm doses of the 1st dilution, mixed with 2 or 3 ounces of water. The Nux may be either given alone or in alternation with Arsenic 2 in 2-drachm doses, mixed with 2 or 3 ounces of water.

Sesquichloride of Iron.—Capsicum.—Both these are valuable remedies to improve the appetite and general condition of horses reduced by excess of labour. Give them in alternation;—the Sesquichloride of Iron in 2-drachm doses, mixed with 6 or 8 ounces of water, every morning for four or five mornings in succession; and the Tincture of Capsicum 1 in 2-drachm doses, in 6 or 8 ounces of water, every night for a like period.

Horses sometimes do not thrive because they require salt. A large lump of rock salt should be placed in the hay rack so that they may lick the mass when they choose.

Diet.—Change the diet of the patient. Try carrots (if in season), or swede turnips, or a little malt, or speared corn. Examine the hay, and see that it is wholesome and free from dust; and the oats, if they are free from mustiness. See Section VI., page 108.

INDIGESTION.

Indigestion is a common affection in both old and young horses. In some forms of the malady the violence of its effects are exerted upon structures remotely situated from the stomach. This is the cause of many diseases both of an acute, sub-acute, and chronic character.

Symptoms.—Indigestion in its more common forms is usually characterised by a dull, unthrifty state of the skin; the hair in spite of all grooming is dry and harsh; it wants that rich glossy look so evident on the skin of well-groomed horses when in a state of exuberant health. The abdomen presents a pinched up condition; the appetite is sometimes ravenous and inordinate, and at other times fastidious. Sometimes the patient will eat dirt, or lick the boards or the plaster work on the walls. The urine is scanty and high coloured; in many

cases this form of derangement is attended with irritation of the kidneys or the bladder, and is made manifest by the frequent attempts of the patient to urinate. The dung in the majority of cases will be scanty; at times nearly black, and at other times clay-coloured, and in hardness and form not unlike those balls of wax used by shoemakers.

If the affection has existed for some time, the patient loses flesh, becomes weak, and is readily fatigued. In other cases the animal is affected with a loud, dry, sounding cough. The dung occasionally contains a few small worms.

In the more severe forms of Indigestion the hair will peel away in patches from various parts of the body. The general movements of the animal will be listless and indifferent; the appetite bad; and the mucous membrane of the mouth disagreeable, pasty, and covered with minute yellow-coloured spots.

PATHOGNOMONIC SYMPTOMS.—*Pinched up state of the abdomen—licking the plaster work—dry unthrifty state of the skin and hair.*

CAUSES.—The causes of Indigestion are numerous. Among the most common I may enumerate the following:—riding the animal a long distance, so as to thoroughly exhaust the system, then allowing the animal too great an abundance of strong indigestible food; insufficiency of food; mow-burnt or mouldy hay; working the animal violently when the stomach is full; bad, sour grass; suddenly changing the diet, especially from a poor to a highly nutritious and stimulating one.

TREATMENT.—The mouth and its contents should be examined in every case. The treatment of the more simple forms of indigestion are in a general way readily corrected

by attention to the diet of the patient. In the more severe forms, however, rest, diet, and medicine may all prove necessary to effect the cure.

The best remedies in general are—Nux Vomica 1, Arsenicum 2, Capsicum 1, Sesquichloride of Iron, Hyposulphite of Soda, Muriatic Acid, and Pepsine.

Nux Vomica 1.—*Arsenicum* 2.—Nux Vomica and Arsenicum are remedies of well known value in numerous forms of Indigestion; they may either be given alone or in alternation. If used alternately, give Nux Vomica of the 1st dilution in 2-drachm doses every morning, mixed with 4 ounces of water; and give Arsenicum of the 2nd in 2-drachm doses every night, mixed with 2 or 3 ounces of water. These medicines may be repeated for four, five, or six days in succession.

Capsicum 1—*Sesquichloride of Iron*—If the patient be in low condition, or enfeebled from excessive labour, have recourse to Capsicum 1 and Sesquichloride of Iron. Give them alternately in 2-drachm doses, and in accordance with the directions stated at page 314.

Hyposulphite of Soda.—This remedy frequently proves of value when the patient licks the walls, or eats dirt, or shews a preference for bad musty hay. Give the remedy in drachm doses, mixed with 6 or 8 ounces of water; or it may be given in alternation with Nux Vomica of the 1st dilution in 2-drachm doses, and repeated for two or three days in succession.

Muriatic Acid is a remedy which on numerous occasions will also prove of service if given either in lieu of, or in alternation with, the Hyposulphite of Soda. Give the Muriatic Acid in 2-drachm doses mixed with 12 or 14 ounces of water. If the Soda and the Acid are used alternately, administer the former in the morning, and the latter at night; or Muriatic Acid may

be given in alternation with Capsicum 1, or with Nux Vomica 1, or with Arsenicum 2.

DIET.—Look closely to the diet of the patient. If the season be favourable, a run at spring grass or a liberal allowance of green clover may prove of signal benefit. Stewed rice sometimes acts beneficially in cases of this nature; also, carrots and cabbages. See Section VI., page 108.

GORGED STOMACH.—TYMPANY.

[ACUTE INDIGESTION.]

Cases of acute disease arising from the stomach being overloaded with food, or from animals eating food of an improper kind, are occasionally brought to veterinary surgeons for treatment. The subjects which suffer the most from this cause are old horses, and horses which feed voraciously.

SYMPTOMS.—The disease generally commences suddenly. The symptoms resemble those of colic, and in numerrus cases are doubtless mistaken for the latter. Gorged Stomach, however, is attended with pain of a more severe character. The abdomen is also distended (in many cases enormously so) with gas, and not unfrequently the stomach is ruptured in consequence; when the death of the patient is rendered inevitable.

In the more severe forms of the malady the pain increases in intensity with great rapidity, and the violence of the animal along with it; he can scarcely be kept upon his feet for even a few moments at a time; he throws himself recklessly upon the ground, and rolls and plunges sometimes without intermission for twenty minutes at a time; and if the violence of the animal for a short period subsides, it does so more from the patient being exhausted than from a cessation of the acute pain.

The abdomen is hard and tense; the respirations are short, catching, and frequently gasping; the pulse at the commencement is seldom disturbed; the skin speedily becomes bathed with perspiration, which is sometimes cold, and at other times hot and steaming. As the violence of the pain subsides, rumbling sounds will be heard to proceed from the abdomen, which are occasionally relieved by an abundant emission of flatus.

PATHOGNOMONIC SYMPTOMS.—*Excessive or partial distension of the abdomen with gas, associated with excessive and long continued violence of the patient.*

CAUSES.—Greedy or voracious feeding horses are very prone to suffer from Gorged Stomach. Tympany may also supervene after a moderate sized, but hastily devoured feed, particularly if the food be of a very solid character, such as a mass of split beans, or a quantity of dry bean flour eaten immediately after severe and long continued labour.

Crib-biting horses are said to be more prone to Tympany than others; but this I am unable to verify from experience. Wheat, if eaten in either its ripe or green condition, will cause it, and in all probability the death of the animal as well. Several of the most severe attacks of Tympany I have ever observed arose from the animals having partaken freely of green wheat. Mr. Percival mentions that during "the march of the British Army from Waterloo to Paris, in 1815, a brigade of horses had been allowed to feed in a field of growing wheat, and the consequences were, that several of them became tympanitic in the body, and became almost frantic with pain and died." Mr. Percival and others who have written upon this form of disease consider that the gas originates from a species of fermentation set up within the food; but this I believe to be an

erroneous idea, the gas in question is thrown off by the mucous membrane.

Complications.—Gorged Stomach, or the presence of improper food within the organ, does not at all times give rise to Tympany. It occasionally induces Inflammation of the Feet (*Laminitis*); and also a general state of acute fever, which, in fact, is a true form of Gastric Fever; or a state of spasm or cramp of the voluntary muscles generally may supervene; or the stomach or the diaphragm may be ruptured; or rupture may happen to both these organs. In other cases again, Tympany may first appear, then subside, and Laminitis or Gastric Fever, or Fever without Laminitis, supervene. Cases of this nature are not common, but nevertheless they do occur, of which I have had experience on more occasions than one.

In examining patients which have died from the effects of Tympany, I have rarely found evidence of Inflammation within any of the structures constituting either the stomach or the intestines; while on the contrary, in cases of Gastric Fever, and in Gastric Laminitis, the mucous membrane of these organs is always inflamed to a greater or less extent.

Rupture of the Stomach.—A frequent consequence of gorged stomach, and one indeed very likely to occur, is Rupture of the organ. The stomach being gorged with food, and the bowels being inflated with gas, the production of which is going on every moment, renders the former extremely liable to this as a consequence of the force with which the patient comes in contact with the ground, during those severe paroxysms of pain already described.

When the stomach is ruptured, it is important to determine the matter. "There exists," says Mr. Perciarl, "two cogent reasons for being able to determine the fact when it occurs: the

first is the preservation if not the enhancement of the medical attendant's reputation; and secondly, the saving of expense to the owner of the patient from the administration of medicine under such a combination of hopeless circumstances."

Symptoms.—The symptoms in some instances are peculiar, and are such as to enable the close observer to determine the fact at once; while in other cases they are sometimes dubious and uncertain. When Rupture arises from gorged stomach, it is not uncommon for the more violent symptoms to suddenly subside, and for the skin to gradually become dry.

The more common symptoms are as follows:—The patient crouches, and leans heavily against the wood-work of the stall or loose box; occasionally the head is elevated, and he curls the upper lip; he regards the *left* side sometimes impatiently, and sometimes with a fixed, steady look; he walks round and round the box; he occasionally stands still, puts forward both fore-legs, and stretches himself out, as though desirous of urinating. The eye is dull and listless; its expression is peculiar; I cannot exactly describe it, but when once seen it is not readily forgotten. Occasionally the animal lies down, and rolls over from one side to the other; when, if the abdomen contains much watery fluid, the act of rolling displaces it, and the sound elicited in consequence is of a nature readily understood. The hair is generally cool and dry. Sometimes the rupture takes place at the entrance of the stomach, in which case the animal will vomit.*

Rupture of the Diaphragm.—In cases of gorged stomach, Rupture of the Diaphragm, attended with an escape

* Vomiting, however, is not to be regarded as pathognomonic of rupture of the cardiac valve; in cases of Tympany, it may arise from other causes.

intestines into the chest, is a result as likely to happen as rupture of the stomach itself; indeed the former occurs more frequently perhaps of the two. In two cases which have come under my care I found both these organs ruptured; but which organ in either case became ruptured the first I am unable to state: the probability is, however, that in both, the diaphragm and the stomach were burst simultaneously. The general symptoms of Rupture of the Diaphragm in every instance are very similar to those detailed as present in rupture of the stomach; but in all cases where the lesion is attended with an escape of a portion of the intestines into the chest, there is this important difference: *the breathing is difficult—being short, catching, and superficial.* Whichever side of the chest the intestines may occupy, the lung on that side will be compressed, and this in turn will partly suppress its respiratory murmur, so that a careful examination of the chest will perhaps enable the observer to detect the difference in the murmur between one side and the other. Sometimes both lungs are compressed from the same cause, in which case the respiratory murmur of both organs will necessarily be partly suppressed.

Rupture of the Diaphragm may occur after the death of the patient; or it may take place, and the animal live twelve or fourteen hours after its occurrence; or the stomach may be ruptured, and the horse live for a like period. These are facts which I have observed on numerous occasions.

Treatment.—The treatment of Gorged Stomach may or may not be a hopeless task; this will altogether depend upon the extent of the engorgement, and the constitutional vigour of the animal. I have treated numbers of cases where the attack, from the commencement to the death of the patient, did not extend over two hours. One case of this nature which

came under my care, the disease commenced and the horse died within the time stated. The weight of the stomach of the animal in question, together with what it contained, was 4 stones 10 pounds avoirdupois. The contents were all solid: not a drop of *loose* moisture was present, although I had given the horse, when alive, a quantity of liquid.

Now, cases where the stomach is gorged to this extent, are from the first all but as hopeless as though the organ was ruptured. If liquid is poured down the throat, the food within the organ immediately absorbs it; and this, on many occasions, may act to the prejudice of the animal.

It has been recommended, as the most rational mode of treatment, to empty the stomach of its contents by means of a stomach pump; but the violence of the animal and the dry state of the ingesta tend alike to render the operation impracticable.

The operation of plunging a trocar into the middle of the right flank has also been recommended. I have tried it in three instances, but beyond affording a little temporary relief, I cannot report in its favour.

The best remedies in general are—Tincture of Capsicum, Nux Vomica 1, Whiskey, and Tincture of Colocynth.

Tincture of Capsicum.—This is one of the best remedies we possess for Tympanites. At the commencement of the treatment, give 2 drachms, by measure, of the strong tincture in 6 or 8 ounces of water; afterwards administer it at intervals of fifteen or twenty minutes, in 2-drachm doses of the 1st dilution. By a steady perseverance in the use of this remedy I have repeatedly observed the disease to succumb. Sometimes I give the first dose mixed with half a pint of Whiskey and half a pint of cold water.

Nux Vomica 1.—This is also another excellent remedy for Tympany. I have known it succeed in cases where Capsicum

appeared inert. Use it in 2-drachm doses of the 1st dilution, mixed with 4 or 6 ounces of water. It may be repeated at intervals of fifteen or twenty minutes.

Whiskey.—I administer Whiskey as a stimulant; my object being to rouse the mucous membrane, and if possible, to check the further secretion of gas. In cases where my patients were of the large, heavy draught breed, I have given as much as a pint of the best and strongest spirit I could purchase, mixed with a quart of hot water; and I afterwards administered Capsicum 1, in 2-drachm doses.

Tincture of Colocynth.—In cases where Tympany supervenes after the animal has partaken freely of grass, Colocynth is the best remedy. Use it in 2-drachm doses, mixed with 6 or 8 ounces of water. The dose may be repeated every twenty or thirty minutes. It is the best to use the strong tincture to commence with, and the 1st dilution of the remedy afterwards.

After-Treatment.—In cases of excessive severity where the animal recovers, it is necessary to use the greatest care in the after-treatment of the patient. Administer gruel mixed with boiled linseed, as directed at page 112.

Barley Water will also prove an agreeable diluent. Be sparing of hay, and dry food of any kind.

GASTRITIS.

Stomach Staggers, Symptomatic Phrenitis, Grass Staggers, and Abdominal Vertigo, are some of the names by which this disease is known and recognised by the profession in general.

Certain forms of the malady have from time to time appeared as an epizootic amongst horses. In the year 1846, according to the statements of Professor Dick and others, it thus prevailed in Scotland. When existing in the epizootic form it appears, to a certain extent, to depend upon the heat and dryness of the

season. Regarding the disease, however, in its broadest character, that is without reference to it strictly as an epizootic, I may describe it as consisting of an inflammation of the villus membrane of the stomach, presenting three phases of development, viz.—as *acute*, *sub-acute*, and *chronic* Gastritis. The acute form may pass into the sub-acute; or the disease may commence as the sub-acute and become acute; or either of them may become chronic.

Symptoms of Acute Gastritis.—This form of the disease is generally present during the hot months of the year. The attack is sudden, and often appears in animals at grass, as well as amongst those which are at work and fed upon green food in the stable.

The earliest symptoms are unsteadiness of the gait: the animal reels and staggers as though drunk; the countenance is dull and stupid looking, and the horse appears to those in attendance as though only half conscious. As the disease proceeds this unconsciousness becomes more marked; the patient falls to the ground, and there remains, to all appearance, completely powerless; the eyes either present a staring, fixed look, or the eyelids are closed; the pulse is generally slow and heaving; and the breathing slow and deep. Sometimes, however, the pulse is quick and irritable, and the breathing hurried; the bowels are constipated, and the urine scanty. In this state the patient may remain for several days, and then (if properly treated) recover; or the unconsciousness and inability to rise may not continue more than a few hours.

Symptoms of the Sub-acute State.—"The symptoms," (to adopt the description given by Blaine,) "frequently first observed, are of a lethargic character; the horse dozes; takes little notice of anything around him; and he will be found often eating slowly, or alternately masticating and dozing. As the

disease proceeds the congestion within the head increases, either in consequence of the accumulation of food within the stomach, or by a translation of the disease to the brain, and the coma produced causes the horse to press his head against any fixed object, or to rest it in the manger, or hang it between his fore legs; occasionally the head is elevated and placed between the rack staves. If the disease attacks a horse at grass, he is either found resting his head against a tree, and stupidly fixed to one spot, or moving with feeble steps in one direction, which may be either backward, forward, or round-about. The breathing in the early stage is not materially disturbed; as, however, the disease advances, it first becomes low and rather protracted; and when the symptomatic attack on the membranes of the brain has produced phrenitic symptoms, it then becomes more hurried.

The pulse varies in different cases; sometimes it is oppressed, at other times quickened. Spasmodic twitchings of the cutaneous muscles will be found not uncommon. When the mucous membranes of the eyes, nose, and mouth present a yellow tinge, biliary suffusion has taken place. Under these symptoms, unless relief is promptly obtained, either the vital energy becomes so totally suspended that the animal falls to rise no more; or the distention ruptures the stomach; or it produces such congestion that the patient sinks apoplectic; or is otherwise worn out by the violence of that phrensy which results from the disease taking on the form of inflammation of the membranes of the brain."*

Symptoms of the Chronic State.—The disease, as I have previously stated, may commence either in an acute or sub-acute form, and pass into the chronic; and I may also add, that the

* Blaine's Veterinary Art, 1841, page 307.

chronic form may exist for a long time, and ultimately become acute, and the patient die.

A horse affected with Chronic Gastritis, so long as he remains at rest, does not present any symptom by which the disease can be recognised; he usually feeds and rests well; he may appear thin in condition, and the hair dry and harsh; but not unfrequently the animal affected feeds and rests well, and the hair lies close to the skin and is glossy; but if the animal be taken to work, especially with a full stomach, and be driven quicker than ordinarily, symptoms of the malady, in all probability, will speedily become evident. The animal will throw his head wildly about; the ears will be drawn close to the poll; he will shake the head as though stung inside the ear by a bee, or tormented by a fly; the eyelids will quiver; he will press heavily upon the bit, and the head will be drawn either to the right or to the left side; and the horse, unless timely brought to a stand, will rush impetuously forward, until he either falls to the ground or is stopped by some large object, such as a wall or the side of a house, against which he will lean for some time; after this he will gradually recover, and afterwards travel forward as though nothing had happened.

The morbid state of the digestive organs causing the above symptoms may remain for an indefinite period, especially if the animal affected be treated with care; but if food be allowed of an improper kind, or in improper quantities, and the patient worked without consideration, the acute form of the malady may speedily supervene, and bad consequences result.

Causes.—The immediate cause arises from an inflamed condition of the mucous membrane of the stomach; and this, in the generality of cases, arises from the presence of improper food within the organ.

"The disease," says Professor Dick, "prevails almost entirely where horses are fed on over-ripe rye grass, whether they are in the stable or at gaass. It occurs suddenly, and from the hind limbs being partly paralysed, leads to the belief that the animal has injured his spine. The symptoms are certainly very analagous; it appears to attack young and old horses indiscriminately. I have seen it," continues the Professor, "in a one-year-old and in a case where the horse was eighteen years old. Several horses are generally attacked on the same farm; and sometimes all the horses in a steading are seized with it. Farm horses are more liable to it than others; but neither carriage nor saddle horses are exempt." The above remarks are true with reference to the cause of the disease when prevailing as an epizootic. It may occur, however, in winter, especially in the sub-acute and chronic forms. The eating of strong coarse hay, or chopped straw, or clover hay, particularly if over ripe, and if the stalks are thick and strong; in fact, "wherever the woody fibre has a considerable preponderance over the succulent and more easily digested kinds of food," Stomach Staggers is very liable to occur.

Treatment.—As soon as the disease commences, if practicable, the animal should be placed in a roomy box, well provided with straw; and where the light which enters the place can be modified, if glaring or annoying.

Should the violence of the patient be excessive, which is seldom the case, it will be the best plan to secure the animal with hobbles.

The best remedies in general are—Aloes, Olive Oil, Nux Vomica 1, Arsenicum 2, Euphorbium 3, Hot and Cold Water, and Ice.

Hot and Cold Water.—Hot and Cold Water are, in cases of this nature, remedies of value. Cold water should be applied to the head by means of coarse cloths, or by fixing a large sponge suturated with water to the forehead. Ice for this purpose is better than water, but it cannot at all times be procured so readily. The application of either the one or the other should be frequent until convalescence is established.

Hot Water is sometimes of great value if given internally. I have known it in several cases to speedily remove the gastric pain. Administer it at the commencement of the disease in doses of a pint. It may be given at a temperature of 116° or 118° Farenheit.

Aloes.—The administration of a purgative is essential to rid the digestive organs of the load of matter which they usually contain. I have known horses thus affected part with long coarse stalks of rye grass, tares, clover, and hay, for days in succession. If the patient be a large, coarse-bred animal, give him a drench as soon after being attacked as possible, consisting of—

Barbadoes Aloes	...	1 ounce.
Water	...	1 pint.

Should this fail to produce a free action of the bowels within twelve or fourteen hours after being given, administer a second draught, containing half the quantity of Aloes.

Purgation will be hastened by giving the patient from a pint to a quart of tepid water every hour.

Olive Oil.—I have administered Olive Oil as a covering or protection to the mucous membrane of the stomach and intestines, against the attrition arising from the action of the coarse stalks of rye grass, tares, or hay upon it. Give half a pint for a dose. It is seldom necessary to repeat the oil. Olive oil is perhaps the least nauseating in its effects of any other kind which could be selected.

Nux Vomica 1 *and* 2.—At the commencement of the disease, use this remedy of the 1st dilution, and give it in 2-drachm doses. The dose to be repeated once, twice, or thrice, daily, or even more frequently if necessary. Its repetition will depend upon the urgency of the case.

When purging is established, it is better to withhold all medicine until the action of the Aloes has to some extent subsided; after which use the Nux of the 2nd dilution in 2-drachm doses.

Euphorbium 3.—In two or three cases of the chronic form of this malady, I have given Euphorbium with the best effects. Use the remedy of the 3rd dilution in 2-drachm doses, mixed each time with 6 or 8 ounces of water. It may either be given alone or in alternation with Nux Vomica 2, or Arsenicum 2.

DIET.—The diet of the patient in every form of this disease will constitute an important item in its treatment. It will be utterly impossible to cure the malady unless the organ diseased be placed in a state of rest, or under circumstances favourable to its rest. The diet should consist of milk and water, or of boiled sago, or of bread and milk. See Section VI., Page 108.

COLIC.

Colic is a common malady, and consequently one familiar to most people who own horses. It is a very painful disease while it continues; and if neglected or improperly treated, it is prone to terminate in one or more of the many forms of inflammatory disease to which the digestive organs are so liable.

Colic is presented in a variety of forms, all of which agree in certain essentials, but differ materially in others. Their differences I shall endeavour to fully indicate, especially in enumerating the medicines which relate to its proper treatment.

Symptoms.—In the *generality* of cases of Colic the animal is suddenly attacked with acute pain in the bowels; the patient crouches, stamps with the feet violently upon the ground; kicks the abdomen with the hind feet, or throws himself down and rolls over. The pulse at first is seldom quickened; the breathing is sometimes short and hurried. In this state the patient will usually continue for a few minutes, when a cessation of the pain occurs and the horse for a like period is quiet; after which the pain returns with perhaps even greater severity than before. As the disease goes on it either slowly subsides or it takes on greater intensity; the patient rolls and tumbles with greater violence; large patches of perspiration break out upon several parts of the body—such as the sides, under the abdomen, upon the haunches, and between the hind limbs.

A *second* form of the malady is where the above symptoms are present, but in a modified form, attended with a manifestation as though desirous to urinate; the fore limbs are advanced, the body stretched forth, and the tail is erected. In this position the horse may remain for two or three minutes at a time, with the head either elevated or the nose turned either towards the right or the left flank, which is regarded with a fixed, earnest look; the position is then changed, and he commences to paw afresh, and to roll upon the ground.

In a *third* form, the abdomen is tense, attended with a rumbling of the bowels, the emission of flatulence, accompanied by the animal occasionally dropping small portions of dung. This is a form which partakes more of Tympany than general Colic.*

In a *fourth* variety of this affection the patient does not manifest any symptoms of a violent character. The pains which occasionally become intense are generally mild and slow; the animal sometimes crouches, and regards its side with a dull,

* See Article Tympany, page 317.

heavy, indifferent look for two or three minutes at a time, then deliberately lies down and rests, or may roll over once or twice in a languid manner, and afterwards rest for more than an hour at a time, to all appearance free from pain. In this state the patient may continue for two or three days, or even longer, never exhibiting any particular violence, nor breaking out into a perspiration, and without the pulse being disturbed.

PATHOGNOMONIC SYMPTOMS OF COLIC.—*Violent pain, of a remittent character, which is clearly referable to the bowels, and which causes the patient to lie down and roll upon the ground.*

CAUSES.—The causes of Colic are numerous. From a number of others I may enumerate the following as the most common:—sudden changes of the diet, as from grass to dry food, or from dry food to grass; musty corn; the eating of short grass when covered with hoar frost; also, allowing the horse to eat short grass, which has been some time mown and allowed to ferment prior to its being used as fodder; allowing the horse to drink greedily of cold water when the body is hot and perspiring. Greedy feeding horses are very liable to dangerous attacks of Colic, especially if they are liberally fed immediately after being brought from severe and long continued labour. Numbers of horses are constitutionally predisposed to the disease, and become affected from causes which to all appearance are of a trifling nature.

The fourth form of the malady, herein described, generally arises from an accumulation of chopped straw within the large intestines. In numerous cases, Colic may arise from causes which cannot be ascertained with any degree of certainty.

TREATMENT.—The best remedies in general for Colic, are—Aconite ⊖ and 1, Nux Vomica ⊖ and 1, Veratrum 1, Cantha-

rides 1, Capsicum 1, Hot Water, Aloes, Chloroform, and Colocynthis.

Aconite ⊖ and 1.—This remedy, in my opinion, will aid in the cure of at least sixteen cases of genuine Colic out of every twenty.*

Its use is indicated when the pain is not accompanied with symptoms of Tympany, and where the skin is more or less covered with perspiration.

Great care is necessary in diluting it freely with water, and in not giving it in over-doses; otherwise it will produce frothing of the mouth of the patient, and momentary acts of swallowing, and other symptoms of a painful character.

Use the remedy of the 1st dilution in 2-drachm doses, mixed with 8 ounces of cold water. If the strong tincture be used instead, 10 drops of it will be sufficient for a dose, mixed in a like quantity of water. The dose, if necessary, should be repeated in twenty or thirty minutes after its administration in the first instance.

Nux Vomica ⊖ and 1.—Nux Vomica is indicated when flatulence is present; when rumbling sounds within the abdomen are heard; when the pain is of a slow, strong, *girding* character; and also when the disease may be fairly attributed to a change of diet. Use it in doses of 2 or 3 drachms of the 1st dilution, or in doses of 10 or 20 drops of the ⊖ tincture, mixed with 6 or 8 ounces of water. This remedy may either be used alone, or in alternation with Aconite.

Veratrum 1.—This remedy will prove valuable on numerous occasions when Aconite or Nux Vomica may have failed to benefit the patient. Its use is indicated when the case is tedious; when the skin, especially that of the head, is covered

* The Tincture of Aconite, which is made from *the root of the plant*, is the most certain in its effects.

with a cold perspiration; and when the animal is purged. Use it of the 1st dilution, in 2-drachm doses, mixed with 4 or 5 ounces of water. It may either be given alone, or in alternation with Aconite, or with Nux Vomica.

Cantharides 2.—Cantharides is a remedy indicated when the bladder is irritated, with or without spasm of the organ. The symptoms which betoken its use are—where the animal frequently urinates, or frequently attempts to do so. Use it of the 2nd dilution, in 2-drachm doses, mixed with 3 or 4 ounces of water. Nux Vomica, on some occasions, will answer to a similar form of the malady.

Capsicum 1.—This remedy is indicated in those forms of the disease where the belly is tympanitic. For every direction as to its use, dose, and other particulars, see Capsicum, article "Tympany," page 322.

Barbadoes Aloes.—A purgative is necessary where the malady arises from an accumulation of chopped hay or straw (see form of Colic No. 4) within the large bowels. I have known the administration of a purgative, in cases of this kind, to bring away immense quantities of chopped straw in pieces of about half an inch in length. The kind of diet given to the patient up to the time of the attack, together with the slow form of the disease, are facts indicative of the character of the derangement, and of the proper course to pursue.

The size of the purgative dose will to some extent depend on the size and breed of the patient. A large-sized horse will require 8 or 10 drachms of the drug; administer it in the form of a ball. If purging should not supervene within twelve or fourteen hours after giving the ball, 4 drachms more of the remedy may be administered. Linseed Oil, in doses of a pint, is sometimes a valuable adjunct in these cases.

The animal should be dosed with warm thin gruel, or small quantities of lukewarm water frequently given. Warm drinks hasten the action of purgatives.

Colocynthis 1.—This remedy I have found valuable in numerous cases of Colic, arising from the animal having partaken of grass. Use it in doses of 3 drachms of the 1st dilution, mixed with 4 or 5 ounces of water.

Should the disease be attended with Tympany, alternate Colocynthis with Capsicum 1. Sometimes it is necessary to administer a 6-drachm purgative ball in cases of Grass Colic before relief is permanently obtained.

Chloroform.—The value of Chloroform, as a sedative, is too well known to need any further exposition of the fact in these pages. Should the disease be very acute, and obstinate in its continuance, have recourse to Chloroform. Give 60 drops for a dose, and administer it in 4 or 6 ounces of cold thin flour gruel.

Hot Water.—Hot water is a capital remedy in Colic; and it will sometimes produce the desired effect when every previously tried remedy upon the case may have failed. Use it in doses of a pint, at a temperature of about 110° Fahrenheit.

An injection of Hot Water, at the above-named temperature, will often prove serviceable.

ENTERITIS.

[INFLAMMATION OF THE BOWELS.]

Enteritis is one of the most dangerous forms of disease to which animals are subject; it is a malady of common occurrence, and horses of almost every age are liable to suffer from its effects. It is, perhaps, most prevalent during the existence of very wet and cold weather.

Enteritis, when once established, cannot be cut down as it were at a stroke. In spite of all at present known to the contrary, it will, for a time, pursue a well marked course.

It is essentially a violent form of disease; and this violence is so palpable to the observer, that he is led almost instinctively to adopt measures for its removal which are hasty and violent also. Hence has arisen the belief in the necessity to resort to those fearful bleedings and enormous doses of medicine, which are so frequently and destructively applied to effect its extinction.

Its treatment requires, on the part of the practitioner, great judgment, energy, decision, and unwearied patience. He has to cope with a foe which is destructive and dangerous in the extreme—dangerous because destructive. Indeed, Enteritis, Pneumonia, and Tetanus are diseases which, perhaps more than all others, require the medical attendant to direct his curative skill *to allay morbid irritation within the tissues affected, and at the same time to economise and support the life powers of the patient to the utmost extent possible.*

The treatment which I shall recommend may appear (especially to those who are wedded to the old methods) altogether inadequate. Strict attention, however, to its principles will soon enable the thinking and judicious practitioner to discover its value.

Symptoms.—The disease rarely commences suddenly: the animal attacked will, in all probability, have been unwell for ten or twelve hours before the more violent symptoms are manifested. Very likely the horse will have refused his food, and occasionally breathed a little hurriedly; the eyes may have presented a dull, anxious look: the coat may have been staring and pen-feathered, the mouth dry, the pulse accelerated; and

if the animal be ridden or driven during the incubation of the disease, his movements will have been heavy and slow. The state now described may be regarded as the *first* or incubating stage of the disease.

The *second* stage of the disease is the one which is usually regarded as the first. The character of the malady now becomes manifest, and its warnings are neither to be longer overlooked nor disregarded. It generally sets in by the animal being attacked with a shivering fit, accompanied with restlessness and a hurried state of the breathing. The patient paws the ground, crouches, looks round impatiently at his sides, lies down, and rolls over. The pulse generally beats from 70 to 80, and is depressed; the skin becomes hot and suffused with perspiration; the extremities are cold, but soon acquire a fine, clear, glossy appearance; the abdomen presents a tightened or contracted appearance; the bowels are constipated, and the urinary secretion suppressed; the nostrils are expanded, and angry-looking within; the eyes present either an inanimate look, or a bright and glistening but anxious aspect. Sometimes the skin is covered with sour-smelling perspiration; the belly is hot, and tender upon pressure. The animal seldom or ever, during this stage of the disease exhibits a complete cessation of pain, but appears to obtain the most relief when laid upon his back, with the hind and fore limbs completely flexed. In this condition the patient may remain for many hours, and during that time the disease may vary but little in intensity; or it may continue, and gradually pass into the third stage, which speedily terminates in the death of the animal.

The *third* stage is marked by the excessive general weakness of the patient; the pulse either ceases to beat, or it becomes thready, and all but imperceptible: the skin is covered with a cold perspiration; the pain may either cease entirely, or continue

more or less to the end. The body and limbs are cold; the respirations are short and hurried, and the breath is cold; the head is held low; the ears are drooping; the mouth cold and frothy. If the animal be made to shift his position he staggers from side to side; the joints suddenly relax; the muscles become loose and jactinating; and at last the poor beast falls heavily, struggles convulsively for a few moments, and dies.

PATHOGNOMONIC SYMPTOMS.—*Pain of an unceasing character, referrible to the bowels, and which causes the animal to manifest more or less unceasing violence during the existence of the disease. The muscular walls of the abdomen are contracted, and the abdomen is tender upon pressure.*

CAUSES.—The causes of Enteritis are numerous. A few of the principal I shall enumerate—working the horse beyond his natural powers during a cold wet day, and afterwards allowing the animal, while thus exhausted, to stand in a cold draught; suddenly changing the diet, especially from a poor to a rich one: the dislodgement from their old matrix of foreign bodies which may exist within the intestines, such as dust balls, or large calculous concretions; strangulated hernia, either at the scrotum, the navel, or any other part of the abdomen; colic producing introsusception, inversion, or involution of the bowels; the presence of a large number of worms within the intestines; and I may add, the repeated administration of large doses of opium, either to cure Broken Wind or Chronic Cough, or as an experiment to test its effects.*

TREATMEMT.—I enter now upon the consideration of the most important part of the business, viz.—the treatment of

I have treated three cases of Enteritis arising from this cause, one of which the reader will find detailed in the *Veterinarian* for 1849, page 309.

Enteritis; before, however, detailing all that I consider necessary with reference to its medical aid, it is incumbent upon me to direct attention to other matters of great importance not only to the patient, but to the professional reputation of the veterinarian also.

I.—The patient should have plenty of room: a roomy box is indispensable to animals affected with Enteritis.

II.—The box should be well provided with straw; otherwise the animal, by its violence, may irreparably injure itself.

III.—The practitioner should have plenty of material in readiness; and by this I mean woollen clothing, consisting of sheets; also an abundance of hot water. The medicines should also be ready at hand.

IV.—Prior to the administration of medicine the practitioner should very carefully examine every part of the abdomen and the scrotum of the patient for rupture or strangulation of the bowels. It is useless to give medicine with the expectation of it affording relief to the animal if any portion of the bowels are strangulated. Some horses have at all times a protrusion of intestine either at the scrotum or at the navel,—a protrusion which may be so small as to escape the notice of ordinary observers; but which, if present, would be unpardonable if not discovered by the veterinary surgeon.

The symptoms by which strangulated bowel is known, and which, in fact, are pathognomonic of it, are *prominence and unnatural heat of the skin at the part; the elastic, but yet firm and hard state of the swelling; and its tenderness upon pressure.*

Hernia may be present and the protruding bowel may not be inflamed. This is easy to determine. The soft state of the hernia, and the ready disappearance of the bowel from steady, gentle pressure of the hand, are demonstrative proofs that the intestine is not strangulated.*

V.—When strangulation of the bowel exists, it should, if possible, be relieved, otherwise the patient will die. Assuming, then, that it does exist, either within the scrotum or at the navel, and that its reduction is imperative, the operator should proceed as follows:—1st, while the patient is laid upon the straw hobble his limbs, and turn the animal upon his back, and by the aid of assistants, and bundles of straw properly placed against the sides, keep him there; next elevate the hind quarters of the horse by lifting them up, and by placing small compact trusses of straw beneath; then flex the hind limbs, and if possible, maintain them in that position; then grasp the protruding skin firmly and steadily, and try if gentle manipulation upon the bowel will return it. Should this method fail, the operator must strip off his coat and bare his arms, and after lubricating them well with olive oil, and emptying the rectum of its contents, he should again pass one hand and arm far within the gut, while with the other he manipulates upon the bowel externally, and thus by operating *within* and *without* at the same time, he may succeed better than by the first process. Sometimes, however, the bowel is hard and unyielding, and to use greater force might rupture it; in which case the patient should be rendered insensible, either with chloroform or by bleeding until faintness supervenes. If the animal be strong, its condition high, and pain

* I take it for granted, if the animal be a stallion, that the observer will know the difference between the testicle and a protrusion of the bowel.

excessive, and the struggles violent, bleeding will be best. The administration of chloroform when the system is in great commotion, and the life powers vigorous, would be attended with considerable danger; the animal might rupture a large blood vessel or the diaphragm, either of which would result in the death of the horse. My advice is (if the patient be as I have described) to unloose the hobbles, and allow him to rise, and while upon his feet, to abstract blood from the neck until the pulse falters, after which allow him to again go down, and during that complete relaxation of the system which arises from fainting, the efforts to return the intestine should be renewed.

VI.—In elevating the hind quarters, avoid forcing the animal all of a heap.

VII.—Before returning the bowel, empty the rectum, and give careful attention to every little circumstance which will prove favourable to the success of the operation.

VIII.—While attempting the operation, maintain the hind limbs of the patient flexed to the utmost extent possible; but if this cannot be done in consequence of the struggles of the animal, free one limb from the hobbles, and by means of a web or a soft rope, pull the limb aside, or forward, or backward, as necessity may require; by these means the operator will procure all the space within the belly, and all the laxity of its muscles which it is possible under the circumstances to obtain.

By one or other of the modes now described, I have in every case of Inflammation arising from strangulated bowel which has come under my care succeeded in affording relief to the patient.

The best remedies against Enteritis in general are—Aconite 1, Arsenicum 2, Bryonia 1, Rhus Toxicodendron 1, and Hot Water. After detailing the common principles with reference to the application of these medicines in Enteritis, I shall proceed to discuss the questions of bleeding, and the use of sedatives in this disease.

Aconite 1.—*Hot Water.*—Aconite is a remedy upon which I place great reliance in diseases of the character at present under consideration. Use it of the 1st dilution in drachm doses, mixed with 4 or 5 ounces of water, and repeat it every fifteen minutes. Aconite given as directed, and hot water applied almost *ad libitum* to the body of the patient externally, and occasionally in doses of a pint internally, will constitute the principal treatment for at least two or three hours at the commencement.

Enteritis, as I have before stated, in spite of treatment of every known kind, will in the generality of cases "have a dash" as it were at the patient. The want of a knowledge of this fact has led to the death of hundreds of horses. Instead of the veterinary surgeon carefully watching his patient, and by the aid of simple agents striving to support the animal until the vital energies are enabled to rally from the savage onslaught made upon them, he has fallen into the fatal error of bleeding to excess at the commencement of the disease, and then storing the animal, to use a couplet from Hudibras,

> "————With deletery med'cines,
> Which whosoever took is dead since,—"

that I can scarcely write in terms of sufficient force to warn men from committing similar errors in future. The skilful general never risks his all upon a single venture; he economises his power until the right moment, and then he attacks the enemy with an unsparing hand, and utterly annihilates him.

It is bad practice, I contend, to bring all our therapeutical force to bear upon a violent disease like the present at its onset; because, if we fail to extinguish it, we have not only exhausted our means, but, in all probability, committed an irreparable mischief. Excessive bleedings weaken the life force, which, let it never be forgotten, *is the real and only healing power*; while large doses of medicine, if they do not act to the good of the patient, will unquestionably harm it. Bleeding, although very rarely necessary, yet (as a rule) in every form of acute disease, should never be resorted to at the commencement.

The proper remedies to use at the onset are those which, though failing to act beneficially, will not be productive of injury. Hot Water is a remedy of this character, but the administrator must be careful not to scald the animal. Water, at the temperature of 114° to 116° Fahrenheit, may be applied to the body externally, or given with safety either as a drench or as an injection, at a temperature of 112° to 116°.*

To apply Hot Water in a sufficient quantity topically, two or three woollen rugs are required, and a large vessel to contain the water. The rugs should be steeped in the water, the loose fluid then wrung out, and while hot, the cloths should be closely and compactly applied around the abdomen, and made secure to the body by means of an article constructed as shewn by the engraving on the opposite page.

Body Sacking.—This article is made of strong sacking, to which is firmly attached a number of leather straps, each strap having a buckle fixed to one end. By this simple contrivance, sheets dipped in hot water can be firmly retained to the body of the animal without fear of displacement, however violent the patient.

* For accuracy, every stable should be provided with a Fahrenheit's thermometer, purposely constructed to test the temperature of hot liquids.

In constructing the Body Sacking, observe the following essentials in its arrangement:—

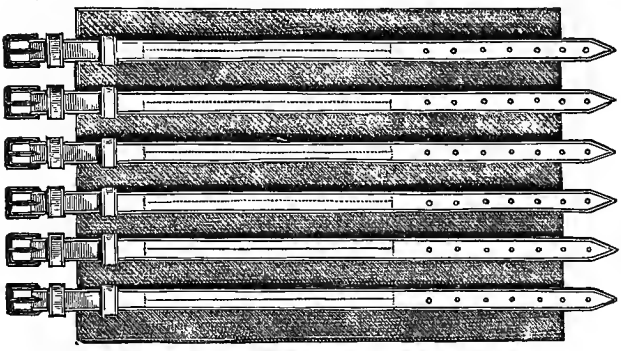


Fig. 22.

I.—Its form when buckled upon the body should accurately correspond to the form of the body of the horse.

II.—It should be eight or ten inches longer than the circumference of the body of a large-sized horse, to afford sufficient space for the wet rug, when applied to the body of the patient.

III.—The straps should be two, or two-and-a-half inches in width, and of considerable strength.

IV.—The straps should traverse the entire length of the sacking, being stitched thereto a little over half their length. The straps should have so much freedom of end as to allow of the ends of the Body Sacking folding over, should the patient be a small-sized animal; by which means it can be as tightly buckled as though it were fixed to a large-bodied

patient. Six straps are figured in the engraving; but seven or eight may be fixed to the article if necessary. The straps should not be more than three inches apart.

Arsenicum 2.—*Bryonia* 1.—In having recourse to these remedies, they may either be used in alternation, alone, or either the one or the other may be alternated with Aconite. Use the 2nd dilution of Arsenicum in 2-drachm doses, mixed with 2 or 3 ounces of water. Use the Bryonia of the 1st dilution in 2-drachm doses, mixed with 2 or 3 ounces of water.

Sometimes Rhus Toxicodendron may be substituted for Bryonia; use it in 2-drachm doses of the 1st dilution, in 2 or 3 ounces of water. Whilst using these remedies, however, the practitioner should exercise patience; a disease of so violent a character as Enteritis cannot be dealt with in a moment. Let the practitioner persevere and learn to wait.

Bleeding.—Sedatives.—Purgatives.—Having detailed the modes of cure which I generally pursue with those cases of Enteritis entrusted to my care, I pass to the consideration of the propriety of bleeding, and the administration of sedatives and purgatives.

Bleeding, accompanied by the use of sedatives, for the cure of this disease, are practices which have the assent of ages; the question, therefore, very naturally arises—is it necessary to have recourse to either one or the other? My reply is (and I write from experience of an extensive kind), that at times, and under circumstances of a peculiar nature, both will be found of value; but the difficulties are in learning to know the times and circumstances which warrant the veterinary surgeon in resorting to their aid. To do so at the very commencement of the disease I have clearly shewn to be bad practice. Let us endeavour to ascertain what condition of the patient will indicate to us the necessity for their use.

During the continuance of the disease I carefully observe the pulse. At the onset it is always depressed, and somewhat feeble; and so long as these peculiarities continue I steadily pursue the course already laid down, and in numbers of cases I have done so for four or five hours in succession, when at the end of that time, if the animal was not relieved, the pulse continued equally rapid, but stronger and harder, associated with a fretful, irritable state of the patient. I remove the hot water rugs, have the patient well scraped; and if after ten or fifteen minutes I find matters to remain as they were, I bleed without further delay. The quantity of blood to abstract will depend upon the change produced in the action of the artery. I allow the blood to flow until the beating of the pulse is softer and fuller. The body is next clothed with light but comfortable clothing, and I proceed to administer a Sedative. The one I usually choose for this purpose is the Tincture of Opium. The size of the dose will depend upon the size and breed of the patient: I rarely, however, under the circumstances, give less than 3 ounces by measures, or to very large-sized horses, more than 4 ounces for a dose. The effects which generally succeed are marvellous; the patient speedily becomes quiet, the surface of the skin becomes dry, and the animal lies down and remains at rest for hours in succession.

Should this state of repose supervene, every attention should be given to the warmth of the patient. To allow the temperature of the body to fall considerably might prove destructive to the life of the animal. The veterinary attendant ought therefore to look well to this matter.

Purgatives.—I very rarely administer purgatives to animals affected with Enteritis, unless the disease arises from the patient having partaken of short sour grass, or food of that character. In cases of this kind a purgative is necessary to rid

the intestines of what otherwise, in all probability, would prove a continuous cause of the malady. A purgative will irritate the bowels; and living tissues, when inflamed, should have rest—rest being one of the primary conditions of cure.

DIET.—The dietetic management relates more to the after-treatment. An excellent rule is to keep the patient hungry until the convalescent stage is fairly over. Feed the animal upon boiled milk and bread, or upon the gruel mixture treated upon at pages 68 and 73.* A small portion of corn, well-cooked, and given in combination with bran, may also be allowed.

The clothing should be regulated according to the breed of the animal, the season of the year, and the comforts which surround him. For other particulars relating to these matters, see Section VI., Page 108.

ACUTE DIARRHŒA.

Acute Diarrhœa is a disease which generally prevails during the spring and summer months; it is, however. occasionally observed at other times. Its tendency, if improperly treated, or otherwise mismanaged, is to terminate fatally, and that too with a rapidity which is truly amazing; nevertheless, if treated in time and properly, and the subjects of it kept quiet, it will generally be found a very manageable disease.

SYMPTOMS.—The disease, in the generality of cases, commences whilst the animal is travelling—he begins to purge, and the motion which the body necessarily experiences during progression materially augments this purging, until at last, from its violent continuance, he is obliged to be stopped and left at rest. At this stage of the disease the animal is in a state of considerable danger. The pulse will either be extremely feeble

* See Note, page 68.

and thready, or totally suppressed, or perhaps a single thread-like beat can be felt now and then; the respirations will be quick and short, at times running from 50 to 60 per minute; the surface of the body will either be totally suffused with a cold perspiration, or it will be present in large patches upon the body, the neck, the sides, the limbs, and the quarters, and these patches will not be merely damp but the perspiration will be excessive; the limbs and the ears will be cold; sometimes considerable pain will be present in the bowels; the animal will roll violently upon the ground, look round at his sides, and the countenance will express great anxiety. In other cases little or no pain is manifested in the bowels, save now and then, as it were, a wandering kind of pain, which is only observed for a few moments. The purging, unless stopped by judicious treatment, will continue unabated, and the fæcal matter which is occasionally parted with is almost incredible—the body of the patient literally dissolves away before the eyes of the observer, and from being perhaps a bulky horse, he suddenly becomes thin and sunk exceedingly in his general condition; the mouth and tongue are covered with a soapy deposit, from which a sour smell is emitted.

The next stage of the disease is that of delirium; the eye takes on a wild appearance, he staggers and rolls as though drunk; the head is held close to the ground, the neck is placed in contact with the bottom of the manger, against which the horse will push with all his strength, at the same time paddling with the hind feet, and every now and then giving vent to wild-sounding neighs; the breath will also have become cold, and it is only with the greatest exertion that he can be got into another position. In this state he may continue for an hour or two; at last he falls, struggles violently for a short time, neighs, and dies.

When the disease reaches this latter stage the case may be regarded as hopeless. The immense quantity of semi-fluid matter which comes from the intestines is for the most part a secretion from the mucous membrane of those organs; and this secretion, be it remembered, is principally supplied from the blood; the body, therefore (unless the morbid action be checked) speedily becomes drained of its serum, and in consequence of the blood not being able to flow through its proper channels, for want of its serum, its more solid constituents accumulate within the lungs, and these organs rapidly become congested, and thus are unable to purify the sanguineous fluid necessary to meet the requirements of the organism. Hence the brain, and every other part, loses its natural stimulus, and the unconscious wildness which supervenes becomes in a great measure accounted for; hence, also, the utter hopelessness of the case, and the speedy death of the patient.

Pathognomonic Symptoms.—*Purging, which generally commences suddenly, is attended with pain, and which is aggravated by labour.*

Causes.—The causes are numerous, but the most common are—giving the horse green food in large quantities, and afterwards driving or riding him a long distance, either during the prevalence of hot or very wet and cold weather; allowing the animal to drink freely of cold water whilst freely perspiring; allowing the animal to drink immediately after eating corn, such as oats or split beans. By drinking water immediately after eating corn, a quantity of rough undigested food is washed into the intestines, where, by its mere mechanical irritation upon the mucous surface, purging is easily produced. I have known it thus caused in many instances. The proper mode in feeding, is always to give the water before the corn. Riding or

driving the animal very fast for a considerable distance when the stomach is filled with food; suddenly changing the diet, particularly if to a kind of food which the animal seldom or ever partakes; subjecting him to cold draughts after riding or driving him for a distance; and lastly, some horses, from the nature of their constitution, are predisposed to diarrhœa: such are the kind termed *washy horses.*

TREATMENT.—Without rest medicine will prove of little or no avail in this disease; if possible, then, place the patient in a comfortable box, well littered with dry straw.

The best remedies in general for this affection are—Veratrum ☉ and 1, Camphor, Sesquichloride of Iron and China.

Veratrum ☉ and 1.—It is best to commence at once with this remedy by giving 2 drachms of the ☉ tincture in 5 or 6 ounces of tepid water, after which, use the medicine in 2-drachm doses of the 1st dilution: it may be repeated every fifteen or thirty minutes according to the urgency of the symptoms. It is rarely, however, that more than two or three doses of the drug are required.

Camphor.—Camphor is sometimes necessary, and succeeds when Veratrum may have failed to produce the desired effect. It may either be given alone or used in alternation with Veratrum. Give it in half-drachm doses, mixed with 6 or 8 ounces of weak whiskey and water.

Sesquichloride of Iron and Tincture of China ☉.—These are to be given when recovery is fully established. Give the Sesquichloride of Iron in 2-drachm doses every morning, mixed with 6 ounces of water; and 3 drachms of the tincture of China every night in a like quantity of water. These medicines may be repeated morning and evening as directed for five or six days in succession.

Diet and After-Treatment.—When the violence of the attack has subsided, and all immediate danger is warded off, great care will be required in the after-treatment of the animal. The patient should be kept as still as possible; he should be warmly clothed, and allowed to drink freely of gruel, made as described at pages 68 and 73; rice-water may be also allowed; or rice-water and milk; also boiled rice, or sago and milk; also aired water, and occasionally a draught or two of cold water, which at times will prove peculiarly refreshing. His diet should consist of boiled grain—such as oats, or barley, mixed with bran and boiled linseed; carrots will also be relished if they should happen to be in season.

Many individuals commit the error of having recourse to dry food in cases of this kind, of which nothing could be more injurious—its very presence upon the debilitated and irritated mucous membrane of the bowels will greatly tend to keep up the diseased action which but so recently prevailed. Let the food, therefore, be soft, soothing, and nutritious in its nature. It is seldom that the patient (if the attack has been a severe one) will be ready for work in less than six or eight days; at least, however well he may appear, I would recommend that he be kept from all laborious work for that period of time. For further particulars respecting diet, see Section VI., Page 108.

SUB-ACUTE AND CHRONIC DIARRHŒA.

This form of Diarrhœa is not common, unless the occasional purging which is manifested by what is termed a "Washy Horse" be considered to come under the present arrangement. When existing, it betokens either constitutional feebleness of the animal affected, or a bad state of the organism. Large-sized, flat-sided horses, are most frequently affected by it;

and its tendency, if neglected or improperly treated, is to terminate in dysentery; and sometimes (though rarely) in Farcy or Glanders.

SYMPTOMS.—The most conspicuous symptom of the disease is that of the animal purging fæcal matters, which are either of a dirty brown colour, semi-fluid, and generally without effluvium of an offensive character; or semi-fluid, clay-coloured, and emitting an effluvium not unlike that proceeding from rotten eggs. The appetite may be good, or it may not—usually it is the former; but however regular and large the consumption of food, the animal is so weak as to be incapable of long continued exertion, either for saddle, harness, or draught purposes.

As the malady continues, the patient becomes slowly reduced in condition; the appetite fails—the limbs swell—a cough supervenes; and in some cases Farcy and Glanders may appear, and the animal becomes a loathsome object.

CAUSES.—Horses of delicate constitutional vigour are prone to this disease, which may be excited by causes of a trifling nature. Improper food, or food not properly prepared, is one cause. The long-continued application of cold and wet to the skin. Allowing the animal to drink freely of water soon after being fed, thereby washing the undigested food into the intestines—which, irritating the mucous surfaces, gives rise to Diarrhœa. The last named is a very common cause, and one readily obviated.

TREATMENT.—The best remedies, in general are—Barbadoes Aloes, Veratrum 1, Camphor, Sesquichloride of Iron, and China.

Barbadoes Aloes.—It is best to commence with a purgative ball, the strength of which should be regulated by the size aud breed of the patient; from 4 to 6 drachms of the drug, made into a ball, will usually constitute the minimum or the maximum dose.

Veratrum and Camphor.—After the subsidence of the action of the purgative, recourse should be had to Veratrum and Camphor. Give them in alternation, morning, noon, and night —the Veratrum in 2-drachm doses of the 1st dilution, mixed with 6 or 8 ounces of tepid water; and the Camphor in 30 grain doses, mixed with a little whiskey and water.

Sesquichloride of Iron.—Tincture of China.—Give these remedies as directed at page 349.

DIET.—The diet of the patient should undergo a thorough scrutiny. Has the animal naturally tender bowels? Is the regular food unsuitable? Many horses of this kind cannot be made to thrive upon dry food; their diet should be carefully prepared, and given soft and wet. During the existence of the diarrhœa, the food of the patient should consist of boiled milk aud boiled bread, boiled rice, rice-water and milk, gruel, and occasionally milk and eggs. When convalescence is established, boiled barley, mixed with bran, and boiled linseed may be allowed; or a little malt; or a few carrots, if in season; or a few boiled turnips,

The teeth of the patient should also be examined.

Avoid having recourse to dry food. Dry food given to the patient will make the disease worse. It irritates the mucous membrane of the intestines.

For further instructions respecting the diet of the patient, see Section VI., page 108.

SUPERPURGATION.

Superpurgation, or over-excitement of the intestines from the undue action of purgative medicine, is a condition of the bowels which the veterinary surgeon is frequently called upon to treat.

The symptoms, associated with the action of a purgative upon the bowels, are--quickened rate of the pulse, attended with a partial but temporary loss of its force; the breathing is also a little hurried: this is the most conspicuous when purging is about to commence; and the animal is nauseated. If the purging, however, does not go on to an undue extent, these symptoms soon subside—the pulse becomes normal, and the nausea is succeeded by a desire on the part of the animal for food; but should the animal be of a weak constitution, or be taken out of the stable and ridden or driven a considerable distance while the purging continues, or taken out too soon after what is called the "setting" of the physic, or if the purgative dose be too powerful in the first instance, or if two or more of these circumstances or causes act in association, the purging will in all probability become excessive, and the life of the animal may be placed in danger. Purging may continue for a long time; but so long as the patient is kept quiet in the stable, so long as the appetite remains good, and the pulse maintains its regular, slow, and round beat, little or no danger need be apprehended; but if the appetite fail, if the pulse becomes thready, and the patient weak, it behoves the owner to act with promptness.

"The following symptoms," says that excellent observer, John Field, "indicate the violent and too long continued action of purgatives, and invariably portend a fatal termination. Staring glassy eyes; frequent, distinct, feeble, and sometimes thread-like pulse; purging offensive matters, with or without

distention of abdomen, or distended abdomen without evacuations; offensive mouth, or tongue pallid or whitish with fur, and pasty; smell quite peculiar; respirations tranquil, but it becomes laborious, when the belly becomes enormously distended; extremities warm; the horse usually stands still, sometimes paws or wanders about, and but rarely lies down."

TREATMENT.—The best remedies in general for Superpurgation, are—Tinct. of Veratrum, Camphor, Tincture of Opium, Flour Gruel, and Port Wine.

Veratrum and Camphor.—Use these remedies as directed at page 352. Should they fail, however, to have a speedy effect, recourse should be had, without delay, to the following:—

Tincture of Opium and Flour Gruel.—Give the patient 2 ounces of the Tincture of Opium, mixed with a quart of Flour Gruel. The Opium will speedily allay the increased peristaltic action of the intestines, and the gruel will act as a protection to the mucous membrane by sheathing it.

Port Wine and Flour Gruel.—Port Wine mixed with Flour Gruel is frequently valuable to check Superpurgation. Give a pint for a dose, mixed with a quart of gruel.

DIET.—The diet, for two or three days after the Superpurgation is stopped, should consist of boiled rice or bread and milk; after which, boiled barley and bran, and boiled turnips may be resorted to until the intestines are fully restored to their normal state.

WORMS.

It is not my intention to enter into any exposition of a learned theory as to the origin of Worms, their varieties, and modes of existence; neither do I intend to enumerate a number of break-jaw names of the orders, genera, and species of worms which exist. These are matters for the consideration of the

naturalist, and possess little or no practical value to the veterinary surgeon, or to the owners of horses. A knowledge of their mode and conditions of development, however, would probably prove of practical use, inasmuch as it might lead to the discovery and application of certain means to prevent their propagation.

KINDS.—"Of the genus of worm called *ascaris* there are many species; two of which inhabit the intestines of horses, viz:—the *ascaris lumbricoides*, and the *ascaris vermicularis*."*

"The *ascaris lumbricoides*, or the long white worm, is a creature closely resembling the common earth worm. It measures from six to twenty-seven inches in length, and is a parasite which inhabits the small intestines. It is a formidable looking object, and if there be many of them, they may consume more than can be spared of the nutritive matter of the food. A tight skin, a rough coat, and a tucked-up belly, are often connected with their presence; they are occasionally voided, both singly aud in large quantities."

"The *ascaris vermicularis* is a small dark-coloured worm, commonly called the needle worm, and inhabits, for the most part, the large intestines. Hundreds of them sometimes descend into the rectum, and immense quantities of them have been found in the cœcum. This variety of worm is a more serious nuisance than the former: they cause a very troublesome irritation about the fundament. Their existence can generally be discovered by a small portion of white, hardened mucus, which is found adhering to the anus."†

SYMPTOMS.—The symptoms of worms are in numerous instances of a very uncertain character. A horse having a starved, pinched appearance, associated with an unthrifty condition of the skin and hair, would, in all probability, be regarded

* Percival. † Youatt on the Horse.

as having worms. These appearances may or may not depend upon the cause in question. A starved, unthrifty state of the animal, may arise from causes of a widely different character. On the other hand, we frequently find worms in great abundance in horses in which we do not expect to find them. Stout, fat, high conditioned horses, are sometimes attacked with inflammation of the bowels: death may result in consequence, and upon making a *post mortem* examination of the carcase, the stomach and small intestines may be found to contain hundreds of worms, numbers of which may have perforated the walls of the intestines, and penetrated the abdominal cavity; and yet during the life of the animal there may not have been observed a single symptom which would have led any one to suspect the presence of so many parasites.

A common symptom, and one generally considered indicative of worms, is that of a deposit of yellow fungus-looking matter close to the fundament; this sign I regard as a correct one; its absence, however, does not indicate the absence of worms.

Treatment.—A number of remedies such as emetic tartar, linseed oil, tobacco, vinegar, and others, are considered infallible destroyers of worms; it is not, however, easy to destroy them so long as they remain within the body.

I have made a number of experiments with reference to their speedy destruction, by immersing earth worms in various liquid medicines, such as spirits of turpentine, tincture of nux vomica, liquor arsenicalis, tincture of aconite, and many others, all of which in their concentrated state will kill worms; but, unfortunately, these medicines cannot be so administered to the living animal without endangering its life.

In the treatment of a horse infested with worms, it should be borne in mind that we have a double duty to fulfil, viz: to destroy the worms, and also that state of the digestive organs which favours their development.

The best remedies in general for the destruction of worms, are—Aloes, Aconite, Turpentine, Savin, and Rock Salt.

Aloes.—It is a good practice to commence the treatment for worms with a purgative; as not unfrequently it removes an incredible number, especially of those small needle-like parasites, the *ascarides vermiculares*.

The size of the dose will, to some extent, depend upon the size and breed of the animal infested; 6 drachms of the drug, however, may be considered, as an average dose under circumstances of this character. It is best to give the Aloes in the form of a ball. For instruction as to the best modes to pursue with reference to the treatment of the animal before and after the administration of the purgative, see pages 75, 76, and 77.

Aconite.—Aconite is a powerful poison to earth worms; and I also know, from experience, that it is a powerful destructive to the larger round worms (*ascarides lumbricoides*). In numerous instances when I have found it necessary to administer Aconite to horses, the owner has expressed his surprise at the great number of dead worms which the patient has voided along with the dung. Before resorting to Aconite for the express purpose of destroying worms the animal infested should have a purgative previously, and when that has operated satisfactorily, the horse should be placed in a comfortable box, and his diet, for several days, should be nutritious, but scanty; the object being to sheath the worms as little as possible from the action of the drug, and also by keeping them with less food than ordinary, to render their bodies more active agents of absorption than what they were previously. The Aconite is then to be given three or four times a day, in 3-drachm doses of the 1st dilution, mixed with 8 ounces of water. If larger doses of the drug are given, and especially if not copiously diluted with water, symptoms of vomiting may supervene. The

animal is affected with efforts of involuntary deglutition; a clicking noise is heard, and continues for some time, which is referrible to the pharynx, so that to repeat the remedy further might be productive of dangerous consequences to the horse. The Aconite, then, should be well diluted, and frequently repeated, say at least three or four time a day.

Turpentine.—Turpentine is an old vermifuge. To large-sized horses 2 ounces by measure may be given for a dose. It is best to administer the remedy each time in a pint of thin gruel. It would not be safe to repeat the dose more than twice a day; and even then its effects upon the kidneys should be watched with attention, and if it produces frequent attempts to urinate, attended either with copious or scanty emision of urine, cease to give more Turpentine, and allow the animal an abundance of oatmeal or linseed gruel to drink. Should medicine be necessary to further neutralise the turpentine, recourse may be had to Camphor.

Savin.—Savin is a vermifuge which I have not tried, but which has been much recommended.

Rock Salt.—Salt is stated to be a preventative of worms. It is a commendable practice to allow horses salt. Place a lump of Rock Salt in one corner of the hay rack, and allow your horses to lick it when they choose.

Section V.

DISEASES OF THE URINARY ORGANS.

NEPHRITIS.	DIURESIS.
IRRITATION OF THE BLADDER.	HÆMATURIA.
SCANTY EMISSION OF URINE.	RETENTION OF THE URINE.

PRELIMINARY REMARKS.

The Urinary Organs consist of the two kidneys—one situated upon the right, and the other upon the left side of the spinal column: also of the two ureters—one of which passes from each kidney to the right and left sides of the bladder, where they terminate: also of the bladder, and a canal or channel which passes from the posterior extremity of the bladder; this is called the urethra.

These organs are not numerous, and—with the exception of the kidneys—not complex in their structure, nor difficult to understand.

The kidneys are the organs which secrete the urine from the blood. The ureters are the conduits by which, as soon as it is formed, the urine is conducted to the bladder. The bladder is a large muscular cavity, or bag, into which the urine, for the sake of convenience, is temporarily lodged; otherwise it would be perpetually dribbling away, to the annoyance and discomfort of the animal: whilst the urethra is the canal or

channel which conducts the urine from the bladder to without, when the bladder expels its contents.

The diseases and derangements of this class of organs are not numerous. Those of the rarer kind, such as Calculi of the Bladder, I have omitted to describe in the present treatise: so rare, indeed, is this affection, and one or two others which might be named, that many of the oldest practitioners in the profession have never seen a case.

The urine is a fluid of a peculiar character. It is composed of a number of substances; and, without doubt, the condition of this fluid will be greatly altered, and the alteration hold a definite relation to the pathological changes which the organism may from time to time undergo; but the intimate nature of these changes, and their relation to disease are questions which, up to the present hour, are unknown. Upon a future occasion, however, it is my intention to treat upon this matter, and to give to the world the few facts and observations which I have been enabled to obtain in this obscure department of veterinary pathology.

The kidneys are subject to inflammation, and to softening of their substance; also to hemorrhage, arising from injuries of a mechanical kind, from softening of their substance, and from excessive congestion of a temporary character. They are also liable to sympathetic disturbance, which causes an inordinate secretion of urine; and also to the formation of calculi within the pelvic cavity of the organ.

The bladder is liable to inflammation, to ulceration of its tissues, and to the consequent escape of the urine into the pelvic and abdominal cavities;* also to hemorrhage, to irritation

* I once treated a case of Peritonitis, which afterwards was proved to have arisen in consequence of an ulcer within the bladder allowing the urine to pass into the pelvic and abdominal cavities.

of its mucous and nervous tissues, and to spasm of its muscular structures.

Such are amongst the principal forms of disease to which the urinary organs are subject. They are also exceedingly subject to injury (especially the kidneys) by the practices of ignorant people, who, if not prevented, will persevere in the indiscriminate use of diuretic medicines to those animals which unfortunately may be under their control. For further remarks upon this matter, the reader is referred to pages 169 and 170.

NEPHRITIS.

[INFLAMMATION OF THE KIDNEYS.]

Nephritis, or Inflammation of the Kidneys, is not a common disease; although I believe it to be more so than is generally supposed. Nephritis, in one of its forms, is very liable to be mistaken for Inflammation of the Bowels. Violent attacks of the malady are highly dangerous. Blaine says—"It is stated that mares are more liable to Nephritis than horses, and horses are more prone to Inflammation of the neck of the Bladder;" and he further states that "his experience does not justify him in believing it." My experience, however, warrants me in doing so. I have not treated a very large number of these cases—possibly no one veterinary surgeon has: but, out of fifteen cases of Acute Nephritis, nine of them were mares; while the majority of cases which I have treated of Irritation of the Neck of the Bladder have been geldings.

The disease may be limited to one kidney, or both organs may be affected at the same time. When both are acutely diseased, the chances are that the patient will die.

SYMPTOMS.—The symptoms of Nephritis, in many respects, are very similar to those which are present when the bladder is inflamed or irritated. Nephritis frequently commences in a very insidious manner: the hind-limbs are moved stiffly; the abdomen is tucked up; the animal urinates frequently, and the urine is scanty. As the disease proceeds, the patient walks with a straddling gait; the efforts to urinate become more frequent and more urgent, and the small portion of urine which may be expelled is mixed with blood; the animal breathes hurriedly, and the pulse is quick and irritable; the patient presents a suffering and dejected appearance; and the skin over the region of the kidneys is warmer than natural.

In other cases (and they are the most common) the symptoms of the disease resemble those of Inflammation of the Bowels. The patient struggles and rolls violently about; perspires considerably; paws the ground; stretches out the limbs as though anxious to urinate, and the urine contains blood. Sometimes the urinary secretion is entirely suppressed, when the violence of the patient is excessive, especially if associated with enteritic disease.

CAUSES.—Injuries of a mechanical nature inflicted upon the loins. Bad food, such as kiln-dried oats or musty hay. Inordinate doses of spirits of turpentine, or Venice turpentine, or nitrate of potash, and other medicines which possess diuretic properties. The absorption of cantharides from blisters which may be applied to the sides in cases of Pleuritis or Pneumonia. The presence of a calculus within the pelvis of the kidney; and it is stated that allowing the animal to drink hard water has caused it.

TREATMENT.—The best remedies and modes of treatment to pursue, in general, are—Aconite, Hyoscyamus, Cantharides,

Barbadoes Aloes, Camphor, and Hot Water Fomentations to the back and loins.

Aconite.—Hyoscyamus.—Cantharides.—As soon as the nature of the disease is fully determined, commence with Acouite of the 1st dilution, and give it in 2-drachm doses, mixed each time with 5 or 6 ounces of water; and repeat it every two hours, for three or four times in succession. Or the Aconite may be alternated with Hyoscyamus of the 1st dilution; or (except when the disease is caused by Cantharides) with Cantharides of the 3rd. Use the Hyoscyamus in 2-drachm doses, mixed with 2 ounces of water; or the Cantharides in drachm doses, mixed with 2 ounces of water.

Camphor.—Should the disease arise from the action of cantharides upon the kidneys, Camphor is the proper antidote. Give it in 2-drachm doses of the tincture, mixed with 4 or 5 ounces of weak whiskey and water. The dose may be repeated every three or four hours, according to the urgency of the symptoms.

Hot Water Fomentations to the Loins are likely to prove of great value, at whatever stage of the disease they may be resorted to. Apply the water by means of a thick woollen rug.

In two or three cases I have applied warm Aconite lotion to the loins, and I think with benefit. Make the lotion as follows:—

Tincture of Aconite	...	...		4 drachms
Water ...	...	...	...	1 pint

Mix the two together, and apply the liquid warm. Apply it freely every two hours, until the more urgent symptoms abate.

Barbadoes Aloes.—A purgative will be useful if the cause of the disease can be traced to bad food; when such is the

case, administer a 6-drachm ball forthwith, and afterwards resort to the Aconite as directed above.

Diet.—The diet of the patient should consist of mashes, carrots (if in season), or boiled turnips. The drink should consist of a little cold water, or barley-water. I am not an advocate, however, for any very large quantity of fluid to drink; give a little, and administer it frequently.

For further particulars relating to diet, see Section VI., page 108.

DIURESIS.

This malady is usually designated Diabetes Insipidus. It is a disease which may prevail at any period of the year, and it may be produced from a variety of causes. It may exist either in an endemic or sporadic form. It is an affection which calls for promptness and decision on the part of the veterinary surgeon, otherwise it may speedily terminate in the patient becoming glandered. The excessive drain of fluid from the system, a fact so peculiar in this disease, so deranges the vital economy of the blood as to favour the rapid development of the latter.

Symptoms.—The symptoms at the onset of the disease are frequently insidious. The appetite fails; the animal exhibits weakness of a general character, with the attendant symptoms, dullness of spirits, and perspiring readily upon slight exertion; the patient is thirsty; he urinates frequently, and the urine is secreted in great abundance. At first neither the pulse nor the respirations are materially disturbed; as the disease proceeds, however, the pulse and respirations quicken, the thirst becomes urgent and excessive, and the patient manifests the

greatest eagerness for water; and will drink soap suds and other fluids of a nauseating and repulsive character if left within reach, especially if they are cold. The colder the drink the more it is relished by the patient.

The urine is clear in colour, and of a very low specific gravity. Regarding distilled water at 1000, I have frequently found diabetic urine as low as 1000·3 or 1006·4.

If the disease is not checked, the weakness of the patient becomes excessive; the body sinks rapidly in bulk; the hair becomes dry and pen-feathered; the limbs swell, ulcers appear upon the nasal membrane, and the animal speedily becomes a loathsome object.

PATHOGNOMONIC SYMPTOMS.—*The secretion of urine is excessively abundant. The urine is colourless, and of a low specific gravity. The thirst of the patient is inordinate.*

CAUSES.—The most common causes of Diuresis are bad food,—such as mow-burnt hay and fusty oats, or oats that are soft; allowing the animal to drink inordinately of cold water when perspiring excessively. Diuresis is always caused by bad food or derangement of the digestive organs.

TREATMENT.—The first essential towards the cure is to remove the cause of the disease, and as this generally arises from improper food. the diet should be thoroughly inspected, aud what is objectionable be at once removed.

The best remedies in general are—Baryta Carbonica 3, and Tincture of Iodine.

Baryta Carbonica.—I have cured great numbers of cases of Diuresis with this remedy. Use it in 2-drachm doses of

the 3rd dilution, mixed with 2 or 3 ounces of water; and repeat it morning and night, or more frequently if necessary.

Tincture of Iodine.—Sometimes the Baryta Carbonica fails to produce the desired effect, in which case have recourse to the Tincture of Iodine. Use it in 6-drachm doses, mixed with 5 or 6 ounces of water. The dose may be repeated night and morning for three or four days in succession.

Diet.—The diet of the patient should consist ef carrots (if in seasou); also rice and boiled barley. Cold barley-water should also be given to the patient to drink.

For every instruction relating to the diet of the animal, see Section VI., page 108.

IRRITATION OF THE BLADDER.

Irritation of the Bladder, like Nephritis, is not a common disease. During the fifteen years I have been in practice I have treated about six cases of the malady, and every case did well. The causes of the disease are sometimes very obscure. In two cases which I treated I never could detect how the disease originated. Sometimes, however, powdered cantharides are given to horses mixed with other substances, to improve their condition; when, if the doses are too large, or the animal is more sensitive to the drug than ordinary, a violent form of Irritation of the Bladder is very likely to supervene.

Symptoms.—The auimal affected is dull, he stands quiet, or occasionally he lies down and appears as though the bowels were affected with pain. The patient frequently tries to urinate; the back is arched, the tail is elevated, and after a prolonged effort the patient either desists or he succeeds in expelling but a few drops of urine. Sometimes the urine contains streaks of blood. If the animal be a mare the pudenda will present a

state of tumefaction, while the skin between the hind limbs will be more or less excoriated from drops of urine adhering to the hair. An examination per rectum of the state of the bladder will prove this organ to be in a contracted state; while pressure upon it will cause the animal to groan and strain violently as though the patient was desirous to expel urine.

PATHOGNOMONIC SYMPTOMS.—*The patient strains frequently to urinate.*

TREATMENT.—The best remedies for this disease, in general, are—Cantharides, Hyoscyamus, and Camphor.

Cantharides.—I have cured several cases of this disease by means of Cantharides; it will not, however, be proper to use in cases where the disease may have arisen from the use of the drug in the first instance. Use the remedy in 2-drachm doses of the 3rd dilution, mixed with 4 or 5 ounces of water; and repeat the dose morning, noon, and night.

Camphor.—For instructions as to the proper use of Camphor, and the dose necessary to give, see page 365.

Hyoscyamus.—This is an invaluable remedy. Give it in 2-drachm doses of the 1st dilution, mixed with 3 or 4 ounces of water. A dose may be given morning, noon, and night.

DIET.—The diet should consist of boiled barley, carrots, and bran. Barley-water to drink. See Section VI., page 108.

HÆMATURIA.

[BLOODY URINE.]

Hæmaturia, or Bloody Urine, is an affection common only to aged horses. The kidneys of old horses, in numerous instances, become softened—indeed, it is rare to examine them without perceiving indubitable evidence of the fact; and when in a

softened condition in the living horse, they are exceedingly prone to become lacerated or ruptured in their tissues if the animal be put to greater exertion than ordinary. The blood, however, which is mixed with the urine, and which is the characteristic feature of the malady, does not in all cases come from the kidneys. In a case which very lately came under my treatment, and which I carefully examined after death, I discovered that the blood had been exuded principally from the inner surface of the ureters.

The patient was an aged cab mare, and the bleeding came on in consequence of the animal being exerted beyond her strength. The appearance of the blood was very singular, and worthy of notice. It was coagulated in the urine, and every time the animal parted with water the blood came away in rolls, the length and thickness of which was about that of a black-lead drawing pencil. This led me in the first instance to suspect that the blood came from the ureters. The patient, in consequence of being very old, was destroyed, and the *post mortem* examination confirmed my surmise: the ureters were injured, and also filled with congulated blood; the kidneys were softened, but not otherwise derauged.

Another case which came under my care was that of a very old draught horse. The animal was injured in consequence of being compelled to drag a heavy load of manure through a quantity of soft clay. The blood came away in small irregular formed clots. The subject of this case recovered under the use of cold water cloths applied across the loins, associated with rest, and the internal use of lactic acid.

Treatment.—All that can be done in the generality of cases may prove but temporary. If the patient is old, and the kidneys softened, more than temporary relief cannot be expected.

The best remedies in general are—Arnica, Lactic Acid, Cold Water Cloths to the loins, and rest.

Arnica.—Use the Arnica lotion to the loins, and Arnica in 2-drachm doses of the 1st dilution, mixed with 2 or 3 ounces of water. A dose may be given morning, noon, and night, until the more violent conditions are passed over.

Cold Water Cloths.—Large woollen rugs dipped in cold water, and placed upon the loins, are to be frequently applied. Cold water injections may also be occasionally resorted to.

Lactic Acid.—Lactic Acid may be given when the affection has been in existence for some time. Use it in 2-drachm doses, mixed with 4 or 5 ounces of water. It may be repeated twice a day for several days in succession.

Diet.—The diet should consist of boiled barley, cold; barley-water, cold, to drink; also, carrots or boiled turnips, cold.

In addition to medicine and cold applications, proper diet and complete rest to the patient are absolutely necessary.

SCANTY EMISSION OF URINE.

Scanty Emission of Urine can never in itself be regarded as a disease. It frequently exists as a symptom of disease. The condition, however, to which I allude on the present occasion, is when the animal appears to be perfectly healthy in every respect, and, in fact, no doubt is so; only, to use the words of the groom, "the horse stales badly." The generality of horsemen regard such a condition as indicative of disease, and without further consideration not unfrequently have recourse to powerful diuretics to remedy the defect.

Causes.—The causes which give rise to this scantiness of urine are numerous. Severe labour may cause it; if a horse

labours severely, and perspires freely in consequence, the kidneys will not secrete that amount of fluid which they would do if the animal was placed in circumstances of an opposite character. The kidneys of a horse living upon dry food will necessarily secrete less water in the urine than the kidneys of another horse living upon succulent food, or diet of a watery nature. A purgative given to a horse, if followed by a brisk action upon the intestines, will greatly reduce the amount of fluid within the body, and for days after the "setting" as it is termed, of the physic, the animal will urinate very scantily; yet it is a common practice with farriers and people who are ignorant of what they are doing, to give the horse diuretics to remedy what they designate "a stoppage of the oss's kidneys."

Working horses secrete less water in the urine in summer than in winter; and lastly, scantiness of the urinary secretion, arising from natural causes, is a very common fact; and if such horses are healthy it is better not to give them medicine, but rather to regulate the defect (if defect it is) by a judicious diet, and now and then allowing the animal a few quarts of barley-water.

Indigestion will cause scantiness of urine: when arising from this source, the animal is hide-bound; the appetite bad, or it may be ravenous; the hair is penfeathered, and the bowels constipated. In cases of this kind the cause should be looked to. The best remedies for the purpose are—Nux Vomica, Arsenicum, small doses of Aloes, or Pepsine. See Article "Indigestion," page 314. See also pages 169 and 170.

SPASM OF THE BLADDER.

[RETENTION OF THE URINE.]

Spasm at the neck of the Bladder is an affection very likely to be mistaken for Colic. The symptoms of both diseases to the inexperienced or careless observer are similar.

SYMPTOMS.—The disease usually commences suddenly; the animal breathes hurriedly; the pulse rises in some cases to sixty or even seventy beats per minute; the animal paws the ground; the abdomen is pinched-up, the back is sometimes arched, and the penis hangs pendulous out of the sheath; the animal throws himself down and rolls violently about, then rises suddenly, looks round at his flanks, stretches himself out, and strains forcibly to eject his urine, but after many attempts fails to do so. Sometimes he perspires profusely, while in other cases the perspiration exists in patches, and is limited to the sides of the neck or beneath the abdomen.

CAUSES.—Some horses exhibit the greatest repugnance to urinate when in harness, but as soon as they are loosed out they do it freely; such horses are very liable to suffer from retention of urine, and if they be allowed to drink heartily of cold water, especially while the bladder is full, the act is almost certain to be succeeded by an attack of acute pain from spasm at the neck of the bladder. An attack may also be caused from the presence of a calculus in the neck of the organ.

TREATMENT.—The best remedies and modes of treatment in general are—Aconite, Nux Vomica, Cantharides, and Injections of Hot Water.

For instructions as to the use of the above-named remedies, see pages 332 and 335; also for every instruction as to Injection, see pages 157 and 158.

The practitioner should always examine the state of the bladder per rectum.

Section VI.

DISEASES OF THE NERVOUS SYSTEM.

TETANUS. APOPLEXY. | PARALYSIS. MEGRIMS.

HYSTERIA.

PRELIMINARY REMARKS.

The phrase "the nervous system," a phrase we hear repeated almost hourly, is one which if contemplated in all its numerous and important, relations will be found to embrace the most comprehensive inquiries which physiological science can open to the mind of man.

The horse, like all other highly organised animals is possessed of "a nervous system," the structure of which is highly complex; and the uses of which are twofold: first, to place the animal itself in intimate relation with the external world; and secondly, to place every member and every part of a member of his body in intimate relation with every other member and part of a member.

"The nervous system," says Erasmus Wilson, "may be divided for convenience of description into—1st, the brain; 2nd, the spinal cord; 3rd, the cranial nerves; 4th, the spinal nerves; and 5th, the sympathetic system."

It is by means of the brain and its nerves, the spinal cord and its nerves, and the sympathetic system, that the relations I have stated are maintained.

The sympathetic nervous system is distributed to the heart, and to the blood vessels throughout the body; and also to those various organs, the aggregate of which constitutes what is called the organic sphere of the animal's body.

The brain and its nerves, and the spinal cord and its nerves, preside over the sensational and locomotive spheres of the animal; while, in addition, the two systems exchange filaments with each other, and thus the whole is balanced in every part in a manner which cannot fail but excite the wonder and admiration of every beholder.

The diseases and derangements of the brain, the spinal cord, and the nerves thence proceeding, I have alone to treat upon in the present section.

The nervous structures of the horse do not manifest such a numerous class of diseases as those which affect the corresponding class of structures of the human being; nevertheless, those which have been observed in the former are closely similar, both in the mode by which they invade the system and in their general course and terminations.

The blood vessels of the membranes investing the brain and the spinal cord are prone to congestion, and to the effusion of serum amid their tissues.

The substance of the brain and the spinal cord are prone to softening and to other changes within their tissues, which are the immediate causes of certain forms of disease, some of which are of a violent and dreadful character.

Injuries of a direct character inflicted upon the spinal cord may destroy all voluntary power in two or more of the limbs; or a similar effect may result to a single limb, or a single muscle of a limb.

The ventricles of the brain are liable to the growth of tumours within their cavities; also the vessels of the brain proper, are liable to congestion, inflammation, and to the formation of Abscess within their tissues.

TETANUS.

[LOCK-JAW.]

It is usual to consider this disease as being presented under two forms, viz.:—Idiopathic and Traumatic Tetanus. As the symptoms which characterise both forms of the malady are precisely similar, one general description of the complaint will suffice.

Tetanus, arising from injuries of a direct nature, is the most common form of the disease, and it is also the most fatal. It is more prone to occur from injuries of a trifling nature in old than in young horses; and it is also more prone to occur from injuries inflicted upon the hind limbs than upon the fore limbs.

Injuries inflicted upon the hind feet, and upon the muscles situate in the region of the ischium, are exceedingly liable to cause the disorder; and that too of a very unmanageable nature.

The period, from the infliction of the injury to the period of the disease being manifested, may be called its period of incubation.

Not unfrequently a wound or an injury causing Tetanus may, to all appearance, be healed before the disorder is observed.

On the other hand, it may arise within a few hours after the occurrence of the accident, and run its course to a fatal result with exceeding rapidity, and with a degree of violence fearful to observe.

Wounds so quickly inducing Tetanus are usually of the variety called *punctured wounds*.

Old horses very seldom recover from the disease, especially where the pulse is much disturbed at the commencement.

In those cases of Tetanus where the jaws become *firmly* closed, recovery from the disease is rare.

The more rapidly the disease supervenes upon the infliction of an injury the more acute it generally is, and the more destructive in its results.

The period of the duration of the disease, in fatal cases, is from a few hours to fourteen or even twenty-one days.

When recovery takes place the duration of the disease is generally from four to six weeks.

Fever is not a necessary attendant upon Tetanus. In many of the worst forms of the disease I have found the pulse scarcely disturbed, unless the patient was unduly excited.

Tetanus is a remittent disease. In cases which tend to a favourable result, the paroxysms of spasm occur less and less frequently, and are less and less severe, until in the end they entirely cease, and the patient recovers.

Tetanus is presented in a threefold form, viz.:—as an acute, sub-acute, and chronic disease. It is from the sub-acute and chronic forms that the greatest number of tetanic cases recover.

The time at which Tetanus may appear after the infliction of an injury varies from a few hours to even three weeks. From three to ten days, however, appears to be the average period.

Symptoms.—The symptoms of Tetanus may be arranged into three classes. First—symptoms of the early or incipient stage of the malady; second—of the middle or sub-acute stage; and third—of the acute, or last stage. In every case of Tetanus which ends fatally, the most acute stage of the disease is the last. The patient is generally in the end destroyed from its excessive active violence. The most acute stage may set in at once, or follow so quickly upon the first as to have prevented the first from being noticed. Should the first stage of the

disease continue for any length of time, the animal will be observed to manifest a peculiarity of gait; presenting, in fact, a degree of stiffness and disinclination to move altogether uncommon to behold. One of the earliest symptoms, and perhaps one more clearly indicating what is about to supervene than any other, is the projection of the *membrana nictitans* over the front of the eye. A degree of stiffness in the gait may arise from other causes—such as recent exposure of the animal to cold and wet, or from severe labour. By lifting up the head of the patient, however, and observing if the haw, as it is commonly called, suddenly projects over the front of the eye, accompanied with a reluctance and a starting back on the part of the patient to submit to the operation, we may at once decide that the case is one of Tetanus. The jaws may not be closed, nor the animal present anything peculiar to the ordinary observer; but the projection of the haw, together with the general hardness of the muscles of the body are symptoms sufficiently indicative of the malady.

Second Stage.—As the disease advances, or passes into the second stage, the general stiffness becomes more confirmed. The head, neck, body, and limbs lose their suppleness. The patient, when made to turn round, does so as stiffly as a beam of wood. The general appearance of the animal at this time is well represented in Fig. 23.

The muscles situate at the junction of the head and neck present a state of tightness peculiar to the disease; the ears are cocked and firm, as though attentive to sound; the hind limbs are placed wide apart; the patient straddles and walks exceedingly slow; the tail is constantly elevated, and possesses a peculiar quivering motion; the muscles of the belly are cramped; the pulse is seldom disturbed, but the respirations are quicker than ordinary; the haw projects more or less over

the eye continually; the temperature of the body will be natural. Should the patient be able to eat, food will be sought with even more than ordinary avidity. For a few days at first the bowels will be torpid, and the urine high-coloured; but as the system becomes accustomed to the shock undergone, unless prevented from the drugging so commonly pursued in this malady, the functions of the digestive and urinary organs will resume, to a considerable extent, their wonted state. The disease being a remittent one, the spasm and general excitement of the system becomes increased, and afterwards declines. The patient perspires freely, the muscular system becomes more rigid, and the respirations are also increased. This remittent character of Tetanus is of constant occurrence. An increase of the general spasm may come on once every twelve or twenty-four hours, for many days in succession, and continue for a long time, with a similar degree of force; then slowly abate both in intensity and in regularity, until it disappears and leaves the patient convalescent; or the third stage may supervene, and destroy the animal.

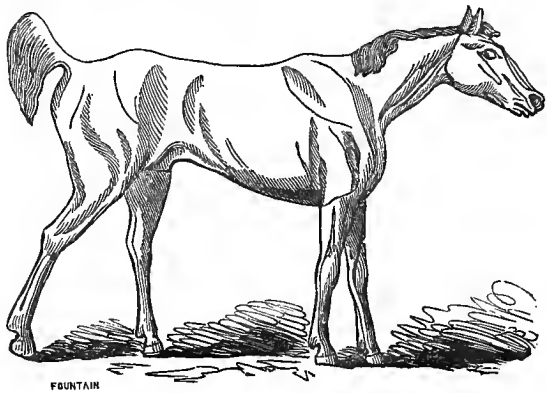


Fig. 23.—Tetanic Horse, after Youatt.

THIRD STAGE.—The third and last stage of this fearful malady is marked by the spasmodic attacks presenting as it were a cumulative character. They appear with increased force; they are of longer duration, and they succeed each other with greater rapidity, until in the end the limbs become so rigid that the patient is no longer able to balance himself; he falls to the ground, a heap of cramp and distortion; the limbs will become inflexible; the neck will be drawn towards the back with a force that threatens to crush the bones of the cervical and dorsal vertebræ into fragments; the nostrils will be dilated, and the body suffused with perspiration; the respirations will have become more rapid and harsh in sound, until at last one spasm more dreadful in intensity than any former one seizes the poor animal, and death mercifully closes the painful scene.

PATHOGNOMONIC SYMPTOMS.—*Spasm and rigidity of the voluntary muscles generally, associated with protrusion of the membrana nictitans, and incapacity of the animal for rapid motion.*

CAUSES.—The mechanical causes of Tetanus are numerous; and many of them are seemingly so simple as to appear inadequate to the production of such violent and terrific effects. Simple punctures and mere scratches upon the skin have been known to induce the malady. Mr. Dickens, of Kimbolton, relates in the *Veterinarian*, for 1857, page 689, the case of a young horse having received a slight scratch upon his side, by coming in contact with a nail. Ten days afterwards the animal was seized with Tetanus of so violent a character as to destroy its life in a few hours.

Pricks in the foot at the time of shoeing, or from the shoe being forced awry, and the stumps entering the sole; punctures near to the ischium; docking too close to the rump (this operation, independently of going too close to the rump, is very likely to induce Tetanus, if the animal operated upon be old); broken knees; kicks from another horse, inflicted upon parts contiguous to the joints, particularly the hock joints; castration, particularly if the animal be exposed to cold and wet afterwards; saddle-galls and injuries of almost every grade of triviality are sufficient, at times, to cause the worst forms of Tetanus.

The causes of the idiopathic forms of Tetanus, are sudden exposure and long continuance of the animal to cold and wet. The two acting in association will speedily produce the disease, especially in delicate, well-bred animals. Irritation, arising from the presence of worms in the intestinal canal, is another (though not a frequent) cause of Tetanus; and it is stated to have arisen in consequence of exposure of the animal to the influence of deleterious gases.

TREATMENT.—Comfort to the animal is of the very highest importance in this disease. Medicine, unaided by warmth and quietness, will effect little or nothing.

Upon the discovery of the disease, the animal should be placed at once in a comfortable box, entirely away from every source of annoyance. Repose and a low degree of light are prime essentials to recovery. The straw in the box should be plentiful, and chopped in the way recommended at page 118; and as the disease will cause the animal to perspire abundantly, plenty of dry clothing should be at hand to use in place of that which it may be necessary to remove. The quantity and kind of clothing will of course depend upon the season and the kind of weather which may prevail at the time. See page 117 to 119.

With regard to medical treatment, we could say much in condemnation of the modes usually pursued. Numbers of horses we doubt not, die from the disease. Numbers, endowed with constitutional vigour sufficient for a time to conquer almost anything, recover in spite of both disease and treatment; whilst others are without doubt destroyed by the treatment pursued.

The treatment, to be rational, should be directed to three ends. First—to the external comfort of the animal; second—to the state of the part locally injured, when the disease arises from causes of a mechanical nature; and third—to control the violence of the disease, by giving all the aid we can to the vital powers. The nature of the attention to be directed to the comfort of the animal, the reader will find amply treated upon from pages 108 to 119.

Tetanus it may be said resembles to some extent, a heap of combustibles; the least violent interference with the disease, and the whole animal is at once in a state of fearful commotion. The administration of large doses of purgative medicine, such as Calomel or Aloes, or the Farina of Croton, are very likely, in patients naturally excitable, to heighten the disease.

Many authors upon Tetanus, manifest alarm at what has been called, "that fearful state of constipation so common to Tetanus." Now this said "fearful state of constipation" is, to a great extent, mythical. When disease of a severe character invades the system, all the natural secretions are for a time more or less suspended; but so soon as the organism recovers its force, or becomes accustomed to the change produced by the disease, the more important functions are resumed. I have witnessed this over and over again in Tetanus, particularly with regard to the digestive functions.

For three or four days after the commencement of an attack, the bowels rarely act; but if, at the expiration of the

time named, these organs do not resume their proper functions, have recourse to one or two warm injections of soap and water, and clear the rectum of its contents; after which it is seldom necessary to repeat the process, or to give purgative medicine. It is true that in *post mortem* examinations of horses which have died from Tetanus, I have found the contents of the intestinal canal to be somewhat dry; this, however, is easily accounted for, if we reflect upon the large amount of watery fluid which is cast off by the skin during those excessive attacks of perspiration I have previously alluded to. This watery exudation is yielded by the excretory vessels of the skin, which vessels derive it from the general mass of blood. On the other hand, the rapid disappearance of the watery portion of the blood excites a general absorption of all the loose fluid throughout the body; hence we can readily explain why the contents of the bowels should, after the death of the patient, be in a state of dryness.

Treatment.—The best remedies and modes of treatment, in general, are—Camphor, Arnica, Strychnia, Nux Vomica, Belladonna, Muriate of Morphia, Chloroform, Extract of Indian Hemp, Steam Baths, and Fomentations.

Camphor.—Camphor is a valuable remedy to commence with, when the disease arises from exposing the animal to cold and wet. Give 3 or 4 drachms of the strong tincture, combined with a small portion of flour, in the manner directed at page 146. The dose may be repeated every three or four hours, for twenty or thirty hours in succession,—during which time those in attendance upon the patient should endeavour to gradually restore warmth to the system. Camphor is not of much service in Traumatic Tetanus.

Arnica.—When the disease arises in consequence of a wound, Arnica is the best remedy to commence with, Use it

of the 1st dilution, and give it in 2-drachm doses. It may either be given alone, or in alternation with Nux Vomica of the 1st dilution.

Strychnia is one of the most valuable remedies for Tetanus, but it requires to be used with the greatest caution. It should not be used lower than the 5th trituration. I have experimented largely with this drug upon tetanic patients, and I am satisfied that it cannot be used with safety for four or five days in succession, of a lower trituration than the fifth. A lower trituration will produce Colic, a disease, which if supervening in Tetanus, is extremely disastrous. Give the medicine in scruple doses, at intervals of five or six hours; it may be given in a little wet flour upon the tongue. It is best to use Strychnia alone—that is, not alternated with any other remedy. As the patient improves, supply the medicine less frequently.

Tincture Nux Vomica.—This remedy may be supplied in alternation with the Arnica. Give 20 drops for a dose in a little water. Administer them every four hours, in turn. Nux Vomica is valuable in promoting the action of the bowels.

Belladonna is a remedy of the highest value in Tetanus. The dose proper to supply varies from 2 drachms by measure, of the 1st dilution, to 2 drachms by weight of the extract of the drug. It is better to resort to Belladonna after the disease has existed for some time. Its use should be steadily persevered in for a week or ten days in succession. If the animal be large-sized, administer 2 drachms by weight of the extract night and morning. Administer it mixed with wet flour upon the tongue. It is better first to make thin the extract with a little Spirits of Wine, before combining it with flour. So long as the patient improves under the administration of the drug, continue its use. Many practitioners report highly of the curative properties of Belladonna in Tetanus.

Muriate of Morphia is another capital remedy to administer in this disease. Four or five grains may be given at a dose; give it in wet flour. It is an excellent remedy to resort to after the bowels have resumed their natural functions. These organs, however, require watching under its influence, otherwise constipation may ensue. As Morphia is the active principle of Opium, the latter may perhaps be selected in preference, on account of the price. If so, use the Opium in drachm doses, night and morning; give it in wet flour. We have more faith in Belladonna as a curative agent in Tetanus than in Morphia or Opium.

Chloroform is another pre-eminent remedy to resort to when the disorder has become chronic, and Belladonna ceased to act with decided benefit. Sometimes a remedy acts well for a time, and then fails to produce any further change. It is occasionally so with Belladonna, in cases of Tetanus. Chloroform is best given in *cold* flour gruel. The gruel should be well boiled, and used thin. Mix in the following proportions:

Chloroform...	6 drachms by measure.
Cold Flour Gruel, thin ...	1 quart.

Before mixing the two together, the gruel must be cold. Place the mixture, when not used, away from the light, and supply the whole at four times, at intervals of six or eight hours between each dose. We have witnessed the best results from Chloroform, ministered as directed. If resorted to at the commencement of the disease, we question if its effects would prove as well marked as if given in six or eight days afterwards.

The Steam Bath should be resorted to in Tetanus more frequently than it is. To do so is not difficult, especially by the aid of the steam-generating apparatus, figured at page 132 of my "Principles and Practice of Veterinary Medicine."*

* London: John Churchill, New Burlington Street, W.

With this apparatus, it may be effected by a process at once simple, cheap, and efficient. Proceed as follows:—Procure two light wooden trestles, seven feet in length, and about four feet six inches in height. Along the top of each trestle bore six holes, each hole half an inch in diameter; bore them at equal distances from each other, and at corresponding distances in each trestle. Place the trestle four feet apart, and parallel to each other in the box or stable where the patient is to be operated upon. Lead the animal between the trestles; then from one trestle to the other fix bent rods of half-inch iron, or of hoop-wood—each rod passing over the patient as an arch. Then over the whole draw a waggon-cover; the cover must be large enough to cover the iron arches and the trestles, and to fall to the ground behind and on each side of the patient. In front fix a smaller piece of tarpauling; fix it under the neck, and in front of the breast. The head of the patient should be outside; but every other portion of the body must be within, with the tarpauline so closely secured as to prevent the escape of steam. Let the whole apparatus be prepared with as little noise and as little excitement to the animal as possible; and when all arrangements are complete, and the outer door closed, turn in the steam near to the ground and under the belly of the patient. Continue it for twenty minutes or half an hour, or longer if the process be agreeable. After the bath great care must be exercised, otherwise injurious effects may ensue. The animal should be briskly scraped; then clothed with hood, breast-cloth, woollen rugs, of an extra size, and woollen bandages to the limbs, after which allow the patient to drink freely of gruel. The animal may then be left alone for several hours. Should the Steam Bath prove beneficial, it may be repeated every three or four days until convalescence is fully established.

Fomentations.—In addition to the steam bath, as recommended above, it may prove advantageous to apply Hot Water Fomentations along the spine. To effect this, procure a thick woollen rug, which saturate with hot water, and place upon the back; and immediately above it place a dry rug, folded three or four times lengthways; then over the whole fix the article called body sacking, such as pourtrayed at Fig. 22, page 343. By this simple process, hot fomentations can be firmly secured to the spine, readily changed when necessary, and retained so long as they may prove beneficial.

Local Treatment.—Having fully detailed the systemic treatment of Tetanus, it is necessary to describe what is requisite locally in the traumatic forms of the malady.

Supposing the injury to be inflicted upon one of the feet, remove the shoe and pare the organ. Thin it at the sides with a rasp: and thin the sole until it springs from the application of gentle pressure. Afterwards immerse the foot in a large poultice, made of bran and hot arnica lotion; the lotion to be made as directed at page 331. The poultice should be renewed twice or thrice a day.

The attendant, in going about the patient, should do so with all possible gentleness. If the injury be a flesh wound, a large, soft sponge, dipped in warm arnica lotion and fixed to the part injured, will be proper to apply. Should a difficulty be experienced in fixing the sponge to the wound, pursue the following plan:—procure a few slips of linen of sufficient length, half an inch wide in the middle, and one inch wide, or more, at the ends. Place the sponge in close contact with the wound, and let an assistant hold it there until the ends of the linen straps are secured to the skin, by means of thick glue or collodion. Collodion will set the quickest, but glue will hold the best.

Place the ends of the linen straps so that the lotion, which may drain out of the sponge, cannot drain upon the glue, otherwise the straps will fall off. By this process the sponge can be held to the wound, and fresh lotion poured upon it when desirable. The arnica lotion may be changed for a lotion of belladonna or tincture of aconite.

Tincture of Belladonna	...	...			1 ounce.
Water ...	...	...	...	...	1 pint.

Mix together, and apply warm. Where aconite is chosen in preference, mix it of the strength directed for the arnica and belladonna mixture.*

In cases of Tetanus, when a wound situate upon the fleshy part is the exciting cause, if the skin contiguous be tight, hot, and tender, make two transverse incisions, one about an inch above, and another an inch below the wound. Make the incisions with a clean, sharp scalpel; make them freely, and allow them to bleed as long as they will. Then clean away what blood may adhere to the limb, and apply the arnica or the belladonna lotion as directed. In two cases of Tetanus arising from wounds situate upon the semi-tendinosus muscle, a few inches below the ischium, two incisions to each case, and of the kind recommended, were made with the best results. In both the cases alluded to, the skin was hot, tightly stretched, and exceedingly tender. In wounds presenting the character described, it may be the best plan to entirely remove the

* A better article than glue, for holding the linen straps to an injured part, will be found in a cement made as follows:—Take black pitch, 2 ounces; gutta percha, cut into thin slices, 1 ounce. Place the two together in a thick brown earthenware jar, which put upon a slow-burning fire. Carefully and repeatedly stir the mixture, until the ingredients are thoroughly melted and incorporated. A little of this made warm, and put upon the ends of the linen straps and held a few moments to the hair, will speedily set and remain fixed, even if wet by the lotion.

tissues originally injured from the tissues contiguous. Such removal could be readily affected in muscular parts; but in the region of a joint, or amongst tendinous structures, it would be impracticable.

Wounds and injuries causing Tetanus should always be examined with care, as foreign bodies may lodge, or purulent matter may be pent within. Where a sinus exists, its depth and direction should be ascertained, and, if practicable, opened freely to the bottom. A contused wound, when associated with Tetanus, should also be freely opened, and its contents removed; but where wounds are healthy in appearance, the skin not stretched, nor the tissues tender, I am of opinion that isolating the wound, or resorting to incisions above and below the injury, will not benefit the patient. The hair should he removed from the back along its entire length, to the depth of three or four inches on each side of the spine; and by the aid of spongio piline, the part can be kept constantly wet with the warm belladonna lotion. In three cases of Tetanus, I had the hair shaved from the back to the extent directed, and the exposed skin freely rubbed with the extract of belladonna, and afterwards the warm lotion regularly applied. Two cases out of the three recovered.

Diet.—The diet of the patient should be one easy of digestion. Mashes of boiled rice and bran, boiled barley and bran, bread and milk, boiled turnips, bran, and boiled oats, are all articles of a proper kind.

For further particulars respecting the diet, see Section VI., pages 108 to 118.

In conclusion, I may add that Traumatic Tetanus is a disease which, in many instances, the practitioner must expect to fail in his efforts to cure; and the *reason why* appears simple. The direct cause of the tetanic state is evidently of a *continuous*

character; and where the cause is continuous, unless it can be destroyed, or its operation prevented, our curative efforts are certain to prove abortive—no matter whether the disorder be Tetanus, or, in fact, disease of any kind.

PARALYSIS.

Paralysis, or Palsy, as it is commonly designated, is far from being a common disease. It generally attacks the animal in a very sudden manner, and from the particular parts of the body in which it is liable to manifest itself, so it is named. With reference to the human being, Palsy is arranged as presenting itself under four varieties, namely:—

1 Paralysis Partialis, or Partial Palsy—as when one or two muscles only are affected.

2. Paralysis Hemiplegia—as when one half of the body longitudinally is affected; or, in other words, when one side of the horse is affected.

3. Paralysis Paraplegia—Palsy of one half of the body in a transverse direction—as when both hind limbs are affected and the rest of the body is free from the disease.

4. Paralysis Venemata, or Palsy proceeding from the animal having partaken of some poisonous drug. This is a rare form of the disease, but it occurs occasionally, and for a very instructive case of the kind see *Veterinary Record* for 1848, page 39.

Partial Palsy is occasionally present in the horse; and one of its most common forms is where the muscles and lips of the face become affected in consequence of the facial nerves being pressed upon.

Symptoms.—The lips hang pendulous; the patient experiences great difficulty in eating—during the act of seizing the

food the head is held awry, the food is gathered slowly and imperfectly, and not unfrequently it falls out of the mouth, the animal being unable either to retain or to masticate it.

Sometimes the loss of power is limited to one side of the face, in which case the muscles affected are drawn towards the contrary side; prehension of the food is more perfect than when both sides are affected; and the animal also masticates with greater power and freedom.

CAUSES.—Pressure upon the facial nerves. I was once called to eight horses all affected with facial paralysis. They had been used a few hours previously at a funeral, and each horse had carried a plume upon his head, which plume had been made secure by inserting the bottom part of it into a broad flat steel spring of an arch-like form, the ends of which pressed close to the cheeks and immediately upon the facial nerves, and every animal in consequence became completely palsied in the face and lips. Two of the number were many weeks before they thoroughly recovered.

TREATMENT.--COLD DOUCHE.—In cases of this nature it is better not to resort at once to medicine. Patience, aided by a few simple modes of treatment, may suffice to restore the nervous energy. Douche the cheeks occasionally, with cold water; apply it freely by means of a syringe, similar to the one figured at page 157. If the muscles on both sides of the head are affected, douche both sides of the face at the same time; and immediately after the operation envelope the head of the patient in a thick woollen rug, and by means of it rub the parts affected until the hair is dry, and warmth is thoroughly restored to the skin. Be careful not to uncover the head of the animal until the skin is warm and the hair dry, otherwise the douche will do little or no good. The operation may be repeated twice

a day, for two or three days in succession, at the end of which time, should it fail to produce the desired effect, recourse should be had to other remedies and modes of treatment of a different character.

The best remedies and modes of treatment in general are—Strychnia, Biniodide of Mercury, and Galvanism.

Strychnia.—This remedy may be given internally. It should be prepared and used as follows:—weigh 1 drachm of Strychnia into a clean large-sized porcelain mortar, add to it 10 drachms of lump sugar, and slowly, but thoroughly, triturate the two together for an hour. Strychnia, when so prepared, constitutes what I call the 1st trituration of the drug, half a scruple of which may be given to the patient for a dose morning, noon, and night; administer it in combination with flour as directed at page 146. It requires to be watched, otherwise, if pushed too far, bad effects may result.

Biniodide of Mercury.—This is a remedy to use externally. Apply it to the cheeks in the proportion of 1 drachm of the Biniodide to 2 ounces of lard.

Galvanism.—Should the above-mentioned remedies fail, recourse may be had to galvanism. It should be applied to the cheeks in a very mild form, and its use continued for some time. Powerful shocks will not only alarm the patient, but also exhaust the natural irritabilily of the structures to which it may be applied.

PARALYSIS HEMIPLEGIA.—This is a form of the disease which more frequently affects old than young animals of the equine species. The disease is generally manifested suddenly; at other times the attack is slow and insidious. The animal is left alone perhaps for the night to all appearance in perfect health, and the attendant, upon entering the stable the morn-

ing following, is surprised to find the horse down and unable to rise without assistance; and upon getting him up he finds that he is incapable of either walking or standing without support. In a few hours, however, he may so far recover as to be able to stand without assistance. It is very rare indeed that the loss of power in all the limbs remains complete.

The symptoms at this stage of the malady are generally well marked. The head will be drawn to the contrary side of the body paralysed; one half of the lips and the ear of the side affected will hang pendulous and powerless; the eyelids will be drawn downwards, and the eye will present a squinting appearance; the limbs of the same side will be placed wide from the trunk, and at irregular distances from each other, and the patient, if made to walk, will do so slowly and spasmodically, and instead of moving in a line directly forwards, the body will move in a curved direction. In the more severe forms of the disease, the anus is partly open, and the urine dribbles from the patient involuntarily.

Pathognomonic Symptoms.—*The limbs of the animal are to a considerable extent powerless. The patient moves feebly and irregularly, and in doing so, the body is involuntarily drawn to one side.*

Causes.—Excessive labour, old age, and constitutional debility.

Treatment.—Perfect recovery is not to be expected. If the animal be old, and not valuable for purposes of breeding, it is best to destroy the patient. Where, however, it is determined to try the case, the best remedies in general are—Aconite, Rhus Toxicodendron, Strychnia, and the Cold Water Douche.

Aconite.—Rhus Toxicodendron.—Should the patient be feverish, have recourse to Aconite and Rhus. Use them of the 1st dilution, each in 2-drachm doses, and give them alternately every three or four hours.

Strychnia.—Before having recourse to Strychnia let the malady have taken on a definite form, and the system have become accustomed to the change. Strychnia will produce little or no good if resorted to at the onset of the disease. Commence with scruple doses of the remedy, prepared and used as directed at page 390. Stronger doses may be given as the system becomes inured to its action. The dose may be gradually increased from drachm doses of the 1st trituration to 5-grain doses of strychnia untriturated.

Cold Water Douche.—In having recourse to the Douche, contrive to let the water descend upon the patient from a good height; and immediately the operation is completed, cover the animal thoroughly and closely with thick woollen rugs, and allow them to remain upon the body until warmth and dryness are restored to the skin.

PARALYSIS PARAPLEGIA,—Two varieties of transverse paralysis are occasionally presented to notice: one where the loss of motor power is complete—*(a)* loss of power in the hind limbs from fracture of the spinal column; and a second, where the motor power is partly lost—*(b)* loss of motor power in the hind limbs from temporary exhaustion.

TREATMENT.—Loss of motor power, as a sequence to fracture of the spinal column, cannot be cured. It is beyond the power of a veterinary surgeon, and the aid of veterinary surgery, to cure fracture of the spine. The sooner an animal so circumstanced is destroyed the better. When arising, however, as an effect of inordinate labour, or struggling long and violently, in consequence of the animal falling into a ditch and being unable to escape, the probability is that good may be effected.

The first thing to be done is to place the animal in circumstances favourable to recovery. If the patient is lying in a ditch, get him out as speedily as possible; and if remotely situate from stable, barn, or shed, either procure a sleigh, and remove the patient upon it, or construct a tent upon the ground and place the animal beneath.

It is easy to erect a dry, comfortable tent, with a few strong poles and a couple of waggon covers;—to carry a few bundles of dry straw to the place; and if the weather be wet, to excavate a ditch around the tent to carry off the surface water.

Having made the patient comfortable, give the animal an injection of warm water and soap, empty the rectum of its contents, and if necessary, the bladder also; then administer two or three quarts of gruel, prepared as directed at pages 112 and 113; or a mess of warm milk and bread sops; after which the limbs should be bandaged with woollen bandages, and all done that can be accomplished at the time to restore warmth and power to the extremities.

The best remedies in general are—Arnica and Rhus Toxicodendron.

Arnica and Rhus Toxicodendron.—Apply Arnica lotion freely to the back and limbs. Use it warm, and give Arnica of the 1st dilution in 2-drachm doses, mixed with water; also, Rhus of the 1st dilution in 2-drachm doses. Give these remedies in alternation, and repeat them every three hours for twenty or thirty hours in succession.

If the patient be unable to get up, he should be raised with blocks, and afterwards partly supported in slings for a few days. In cases of this kind the extremities sometimes swell to a considerable extent, and the muscles are so bruised and weakened as to require considerable time ere they fully recover their normal condition.

APOPLEXY.

[CONGESTION OF THE BRAIN.]

Apoplexy, like Paralysis, is a rare form of disease; and when it does occur, frequently proves fatal, unless detected in its incipient stages, and treated judiciously and decisively.

The disease generally presents three distinct or well-marked stages—the first of which is characterised by a preternatural excitement of the animal; the second, by unsteadiness of gait and partial unconsciousness; and the third, by profound coma, stertorous breathing, and ultimately death. The periods which may elapse between one stage of the malady and another will depend upon circumstances, such as the age, breed, and general treatment of the patient.

SYMPTOMS.—FIRST STAGE.—The animal is excited; he looks wildly about; sometimes he starts, and manifests alarm when approached even by his regular attendant; he is impatient, feverish, and restless. If driven in harness, he will pull towards one side of the road more than the other,—and, if not prevented, will run against the walls or into the hedges; and at times he may become so ungovernable as to run away. The appetite is sometimes disturbed, and at other times not.

SECOND STAGE.—The second stage of the disease is marked by more decisive symptoms. The movements of the animal will be more unsteady, and less under the influence of the will; the eye will be dull and inanimate; the patient will bore his head aginst the wall or the wood-work of his box; occasionally he may be aroused for a short time, when he may seize a mouthful of food, masticate it for a few moments, then press the head against the wall, and doze as before. The voluntary muscles will be affected with tremblings and involuntary twitchings. The pulse, in some cases, may be as low as twenty

eight per minute, and the respirations softer and more gentle than natural.

THIRD STAGE.—The third stage is characterised by complete insensibility, and loss of motive power to the patient. The pulse will be reduced, and the respirations in many cases will fall as low as four per minute. In this condition the patient may continue many hours; when at last the breathing will become stertorous, and death speedily supervene.

PATHOGNOMONIC SYMPTOMS.—*Excitement of the animal in the first instance, succeeded by unsteadiness of gait, associated with boring of the head against the wall, dozing and partial blindness in one or both eyes of the patient.*

CAUSES.—The causes, in many instances, are obscured and uncertain. Sometimes the disease is associated with disease of the digestive organs; and sometimes, with tight reining and over-driving, especially during the prevalence of very hot weather.

TREATMENT.—Horses affected with Apoplexy seldom recover, unless the disease is discovered and properly treated during its incipient stage. For further particulars respecting the treatment of this disease, see article "Gastritis" (Treatment of), pages 327 to 329.

MEGRIMS.

"With those out of the profession, who have much to do with horses, Megrims appears a disorder intelligible enough. Every horse-dealer or groom pretends to know what Megrims is; in the minds of these individuals there is no mistaking it for anything else; and in point of fact—so far as a certain common assemblage of symptoms go—Megrims is not difficult

to diagnose, it being nothing more than what is medical language we should designate Vertigo."*

Megrims is a disease common to old horses; it is rarely that young horses are so affected. Sometimes it appears in a very mild form, and the attacks of Vertigo are manifested at long intervals: while in other cases they are so violent and so frequent, especially when the horse is at work, as to render the animal all but useless.

Symptoms.—The attack is generally sudden. The animal may be going at full trot, when all at once he will commence shaking his head; the ears will be drawn, in a peculiar manner, close to the poll; the eyelids quiver; the nose will be protruded, and the head will be pulled round to one side; at the same time the body of the animal will tend in the same direction. If the driver perceives what is the matter, and pulls the animal to a stand, further consequences in all probability will be prevented; but if he be ignorant of the affection, and perseveres in driving forwards, or in driving quick, the attack will be aggravated; the animal will commence trembling violently, to breathe quickly, and to perspire; he will rush forward, unconscious of surrounding objects, stagger, and fall to the ground, where he may lie for ten or fifteen minutes—at the end of which time he will rise upon his feet, shake himself, and proceed as if nothing had happened.

Pathognomonic Symptoms.—*The attack is sudden, and the animal is affected with giddiness.*

Causes.—The disease may arise from the presence of tumours within the ventricles of the brain; also in conse-

* Percival's "Hippopathology," vol. iii., p. 27, 1st edition.

quence of the arteries at the base of the organ being ossified; also from chronic disease of the digestive organs. Driving a horse in winkers will sometimes excite the disease: while the same animal, if driven with an open bridle, may not be attacked.

TREATMENT.—When the disease arises in consequence of tumours within the lateral ventricles, or from ossification of the arteries at the base of the brain, the disease cannot be cured; when caused, however, from disease of the digestive organs, the case, in all probability, will admit of being cured.

The best remedies, in general are,—Barbadoes Aloes, Nux Vomica, Arsênicum, Pepsine, and Sulphur.

Barbadoes Aloes.—In two or three instances I have known Megrims cured by the aid of Aloes, and by strict attention to the diet. Give the patient 1 drachm by weight of Aloes daily, until purging is produced.

Nux Vomica.—Arsenicum—When the purging has ceased, have recourse to Nux Vomica and Arsenic. Give the remedies night and morning alternately. Use the Nux Vomica in 2-drachm doses of the 1st dilution, mixed with 3 or 4 ounces of water; also the Arsenicum, in 2-drachm doses of the 3rd dilution, mixed with 2 ounces of water. The use of these remedies may be persevered in for ten or twelve days in succession, or even longer, if thought necessary.

Pepsine.—Some time ago I was consulted respecting a horse affected with Megrims. In addition to the disease, the animal presented an unthrifty appearance; the skin was dry and harsh; the hair staring, and its natural colour bleached; the abdomen presented a pinched-up or contracted appearance; the dung was dry and glazed; the appetite was moderate. The animal was also affected with diseased thrushes, and with Grease in the heel of the right hind limb. Small doses of

Aloes were administered to commence with; after which I gave the animal Pepsine regularly for some time, after every meal. Regulation of the diet was strictly enforced. The patient recovered.

DIET.—The diet of every horse affected with Megrims should undergo a thorough examination and revision. Is the corn fusty? Is the hay good? or does it contain dust? or is it mouldy?

For every information respecting the diet of the patient, see Section VI., page 108.

HYSTERIA.

I now enter upon the consideration of a malady which, up to the present period, has not been described by any English veterinarian except the author of the present treatise. I designate the disease in question Hysteria, from the general resemblance which I believe exists between it and certain forms of Hysteria which at times are known to affect the female species of the *genus homo*.

In the year 1854 I published a pamphlet upon this disease,* and up to the period named I have seen and treated six cases of the malady; since then, however, I have treated four others, and been consulted twice respecting it.

I have never known this disorder to affect animals of any kind but mares.

It is far from being a common disease—in proof of which I may state, that I have conversed respecting it with veterinary surgeons who have been forty years in extensive practice, and who have stated to me that they never saw a case of the kind.

I am unable at present to assign any cause of the disease which appears to me adequate to produce it.

* On Hysteria in the Mare, with illustrative cases; by W. Haycock, M.R.C.V. London: Aylott & Co.

In every case of the disease which I have treated hitherto, it has been manifest in mares which had previously stood at rest for a period varying from three to seven or eight days.

The disease commences suddenly, and always by the animal manifesting an unusual state of gaiety and wildness upon being taken out of the stable, either for work or for exercise.

The disease never occurs to mares which are daily put to work, or are daily exercised; so that it does appear that confining mares in the stable for several days in succession is at least a cause which predisposes the animal to the affection.

The name which I have given the malady has been objected to, on the ground that it is not analogous to Hysteria in the human being, to me, however, it appears closely similar—so far as I can judge of Hysteria from books especially—to what Dr. Copland, in his "Dictionary of Practical Medicine," designates the "anomalous forms" of the affection.

Symptoms.—When Hysteria is likely to manifest itself, the animal, when brought out of the box, will commence leaping and jumping in a wild and ungovernable manner, and occasionally to falter in its gait. The limbs will suddenly become powerless, and the lost power will appear as suddenly to return. The animal will perspire excessively and breathe hurriedly; when, if the rider or driver should suspect what may happen, and return the mare at once into the stable, worse consequences may not ensue; but if the animal is driven forwards, symptoms indicative of a dangerous condition will in all probability supervene.

As the disease proceeds, the voluntary muscles of the hind limbs will become so affected with spasm as to render them powerless. The animal will fall to the ground, struggle, and fight almost without ceasing. The mucous membrane of the

nostrils will become of a dirty blue or leaden colour; the breathing will be hurried, short, and at times gasping; the skin will be bathed with perspiration, which, in the generality of cases, will be hot and steaming. In addition to the incessant struggling, the animal will strain violently, and eject, by the urinary passages, immense quantities of bloody urine. The pulse may beat from 60 to 100, and the respirations reach as high as from 30 to 50 per minute.

In this condition the patient may remain for some hours, until at last the animal dies from exhaustion; but, if carefully dealt with and judiciously treated, the violence may subside, and recovery ensue.

Pathognomonic Symptoms.—*The animal is affected with partial loss of voluntary power, which rapidly attacks first one limb, and then another; the muscles of the hind limbs are affected with severe spasm; and the urine is mixed with blood, and is of a dark coffee-colour.*

Treatment.—Prior to commencing the medical treatment of a patient affected with Hysteria, secure for the animal, if possible, the following advantages, viz.:—a loose box which is clean and cool in temperature, where the light is admitted sparingly, and where straw is dry and plentiful.

The best remedies in general are—Aconite, Belladonna, Chloroform, and Mercurius.

Aconite and Belladonna.—Commence at once with these remedies. Use the Aconite in 2-drachm doses of the 1st dilution, mixed with 6 or 8 ounces of water; a dose may be given every half hour, for two or three times in succession, after which have recourse to Belladonna, and use it in 2 or 3-drachm doses of the ⊖ tincture, mixed each time with 3 or

4 ounces of water. The dose may be repeated every fifteen minutes, for three or four times in succession, when if the patient be improved, use the remedy in 2-drachm doses of the 1st dilution, and repeat it at longer intervals.

Belladonna is invaluable in Hysteria. I scarcely ever knew it fail to afford the patient speedy relief. Four cases out of the six which are published in the pamphlet I have previously referred to, were principally treated with Belladonna, and they all recovered.

Chloroform.—Should Belladonna fail to afford that relief to the system desirable, have recourse to Chloroform. Use it in 2-drachm doses, mixed with a pint of cold thin flour gruel. The dose may be repeated in two hours afterwards should necessity require.

Mercurius.—The uses of the Belladonna and the Chloroform are to sooth the system and render the animal quiet; effects which may be known by the patient ceasing to struggle, and by the skin becoming dry, when our attention should be directed to the regulation of the urine, and one of the best remedies for this purpose is Mercurius. Use it in half-drachm doses of the 2nd trituration, mixed with a little flour, and given as directed at page 146. The dose may be repeated every hour, as frequently as necessity may require.

After-Consequences of the Disease.—The condition in which the patient may be left after the acute form of the disease has subsided is a matter which requires attention. If the attack is severe, the animal will not be as lively and as vigorous for some time afterwards as before the attack. Sometimes the voluntary muscles generally will be greatly enfeebled; at other times the voluntary muscles only of the hind limbs; and in other cases again the debility will be principally

confined to the psoas muscles.* When the voluntary muscles of the organism at large are affected, the appetite of the patient will be bad; the movements of the limbs will be feeble, stiff, and somewhat uncertain; the abdomen will present a pinched-up condition, and the patient will daily lose bulk. The system, in fact, when so affected, requires tone and vigour; where the muscular debility, however, more especially affects the psoas muscles, the movements of the hind limbs are of a different character from what I have described, and are such as to indicate the structures affected. In addition to the general weakness of the limbs, the haunches will be straighter than natural, and the animal will step as though one hind leg was longer than the other—similar, indeed, to the movements of a man having a long leg and a longer, and who, when walking, will rise and fall at every step.

Treatment.—In conditions of the kind now described, I do not advocate much treatment medically if it can be avoided. If the weather be favourable, and the season of the year proper, the best thing to do is to turn the patient for several weeks to grass, when, in all probability, the animal will return perfectly restored; but if the season prevents this, then try the effects upon the patient of a loose box, warmth, and diet of a soft and nutritious character.

The best remedies in general are—Barbadoes Aloes, Sesquichloride of Iron, Tincture of Capsicum, Arnica, Rhus Toxicodendron, and Cold Water Cloths to the spine.

Barbadoes Aloes.—Use the Aloes, and administer them as directed at page 397. Use them until purging commences, then withhold the remedy, and after the subsidence of the purging have recourse to the Sesquichloride of Iron and Capsi-

* The psoas muscles are muscles situate under the spine. See Glossary.

cum. Give the former in 2-drachm doses in 6 or 8 ounces of water every morning, and the latter in 2-drachm doses of the 1st dilution in 5 or 6 ounces of water every night. Repeat these remedies daily for six or eight days in succession.

Arnica.—Use the Arnica both as a lotion externally and as a remedy internally. As a lotion, use it as directed at page 201, apply it freely along the back of the patient three, four, or five times daily. Give Arnica in 2-drachm doses of the 1st dilution, mixed with 2 or 3 ounces of water; a dose may be given two or three times a day for several days in succession, or it may be given in alternation with Rhus Toxicodendron, in 2-drachm doses of the 1st dilution.

Cold Water Cloths.—Should the Arnica lotion fail to afford the patient relief, try the effect of Cold Water Cloths applied to the back along its whole length. The wet cloths should be covered with dry woollen ones. The object being to excite an increased action within the skin and sub-tissues of the structures affected.

DIET.—The diet of the animal should consist of locust, bran, rice, boiled barley, turnips, carrots. For further particulars, see Section VI., Page 108.

Section VII.

GENERALITIES.

PURPURA HÆMORRHAGICA.
LYMPHITIS.
MYOSITIS.
LAMINITIS.
OPTHALMIA.
OPACITY OF THE CORNEA.
GLANDERS.
OVER-EXHAUSTION.
MELANOSIS.
STRANGLES.
CHILL.
RHEUMATISM.
SPECIFIC OPTHALMIA.
NYMPHOMANIA.
FARCY.
SWELLING OF THE SHEATH.

PRELIMINARY REMARKS.

The present section may be regarded as somewhat heterogeneous in its general character. It treats upon a number of diseases which cannot be legitimately classed in any of the preceding sections. Many of the maladies herein described affect the organism at large. Purpura Hæmorrhagica, Glanders, and Rheumatism are diseases of this kind; I have therefore deemed it the best to classify them with the principal diseases of an idiopathic nature, which affect the muscles, the feet, the eyes, and the lymphatic system.

To have arranged these maladies into separate sections would have necessarily involved much additional matter, without adding materially to the usefulness of the volume, besides increasing the size to an extent far beyond its present limits.

Perhaps at some future time I may re-arrange the contents of this section; for the present, however, I trust the reader will find it sufficiently complete for all practical purposes.

PURPURA HÆMORRHAGICA.

I regard Purpura Hæmorrhagica as a disease arising from a species of paralysis affecting the filaments of the organic nervous system, which are distributed through the tissues of the arterial and capillary blood-vessels.

Purpura in the horse and Quarter Ill in cattle are diseases closely analogous. Purpura is generally seen in association with Scarlatina: in fact, before the latter terminates fatally, it invariably takes on the form of Purpura. It may exist, however, as an independent disease; and when such is the case, the probabilities are—if the patient is young, and the system is not poisoned with huge doses of medicine—that recovery will ensue; but when Purpura appears in association with Scarlatina, especially when the Scarlatina is of a malignant form, the probabilities are against the patient, however young it may be, or however judicious the treatment. Purpura Hæmorrhagica is a disease of a severe character, and is at all times to be considered highly dangerous, especially if associated with Scarlatina, and the patient is old and the vital energies weakened.

Symptoms.—The symptoms of this affection are usually well marked. The attack is generally sudden, both when it appears in association with Scarlatina, or as an idiopathic disease. Its first appearance is marked by sudden swelling of the limbs (generally the hind limbs), which is speedily succeeded by an extension of the swelling to other parts of the body—such as the head, the fore limbs, and under the abdomen. The

swellings are hard, lumpy, and somewhat tender; and their terminations are exceedingly abrupt, and they do not readily pit upon pressure. The nasal membrane is, or speedily does become, covered with large purple-coloured, or blood patches. The respirations are generally disturbed; and the pulse, in the less severe forms of the malady, will beat at sixty or sixty-five: while in the more severe types, from eighty to ninety, or even one hundred beats per minute, are common. As the disease proceeds, other symptoms of a peculiar character are presented. The head, if not affected at the commencement, will swell, and, in the course of a few hours, reach such a size as to present a truly hideous appearance; the lips and nostrils become so hard, and distended with effused blood, that the patient loses all power to partake of food. Sometimes the swellings of the head will for a time be limited to the eyelids of one eye; or the tongue may swell, and ultimately attain such a size as to gag the mouth open. When the nostrils are distended, or their mucous membranes covered with blood-patches, the breathing becomes snuffling and harsh in sound; and when the eyelids are rapidly distended, bloody serum is exuded, which runs down the cheeks, and the patient appears as though weeping blood. Not unfrequently the dung is coated with blood; and the urine may also contain it, in consequence of blood being exuded from the internal surface of the bladder.

Pathognomonic Symptoms.—The Pathognomonic Symptoms are—*sudden swelling of the body and limbs, which frequently appears in association with Scarlatina, but which may appear independent of the latter; the swelling terminates abruptly, and patches of effused blood are also present upon the nasal membrane of the nostrils.*

CAUSES.—Anything which debilitates, or lowers the tone of the vital energies, predisposes the organism to the development of Purpura—such as exposure of the animal to cold and wet; poor, scanty diet, especially in association with severe labour, and continued exposure to cold and wet. Scarlatina is a cause of Purpura; also that peculiar state of the respiratory organs produced by, or associated with, Chronic Cough.

TREATMENT.—The best remedies, in general, are—Bryonia 1, Nitric and Muriatic Acids, Arsenicum 3, Ammonia Citrate of Iron, Sesquichloride of Iron; and Cold Water Bandages and Scarifications.

Bryonia.—Arsenicum.—I have found Bryonia to be a remedy of great value in this disease, especially in its idiopathic forms. Use it in 2-drachm doses of the 1st dilution, mixed with 3 or 4 ounces of water. The doses may be repeated three or four times a day. It may either be given alone or in alternation with Arsenicum, of which use the latter in 2-drachm doses of the 3rd dilution, mixed with 2 or 3 ounces of water.

Nitric and Muriatic Acids.—For instructions as to the use of these remedies, see page 184.

Ammonia Citrate of Iron.—This is a remedy of great value, if used during the convalescent stage of the disease. Give it in 2-drachm doses, repeated three or four times a day; each dose should be mixed with 6 or 8 ounces of water. It improves the condition of the blood.

Sesquichloride of Iron.—Sometimes this latter preparation of Iron acts better than the Ammonia Citrate. Give it in 2-drachm doses, mixed with 5 or 6 ounces of water. A dose may be given night and morning.

Cold Water Bandages.—Apply bandages, dipped in cold water, freely to the swollen limbs; soft twisted hay-bands will

prove the best, especially for large-sized, coarse-limbed horses. Cold water, if properly applied, invigorates the system, and the bandages will afford support to the weakened vessels of the limbs. They may be renewed three or four times a day.

Scarifications.—The swellings which appear, arise from the presence of effused blood, beneath the skin, cellular tissue, and amongst the muscles. The blood, when effused, should be dealt with, as far as possible, like a foreign body. When effused in large quantities, its continued presence is very likely to prove injurious, in consequence of its being decomposed. To prevent this, as far as possible, and to relieve the tenison, scarify the swollen parts freely with a small lancet. Avoid cutting the skin in the region of a joint, or amongst the muscles and tendons of the limbs. The nose, the lips, the tongue, the sheath, and beneath the belly, are parts which admit of being freely scarified.

DIET.—The patient should be placed in a cool, dry, comfortable box. The diet should be generous but light. Boiled barley, malt, and bran will be suitable; or boiled beans; also a few carrots, if in season. If the patient be young, and of considerable value, allow him half a bottle of port wine every day, for five or six days in succession. When convalescence is established, exercise the patient daily, if the weather will permit.

For further particulars respecting the diet, see Section VI., page 108; also pages 58 to 62.

MELANOSIS.

Melanosis is an affection which I scarcely know whether to class as a disease or not, It is manifested for the most part by old *grey* horses. It is not, however, exclusively confined to them, although I have never seen it except in horses of this

colour. One singular feature in connection with it is, that it never appears except when the animal grows lighter in colour.

Melanosis is not to be found in every aged horse of a grey colour; although I believe melanotic deposits within them to be more common than is generally supposed.

Symptoms.—The symptoms are of a very simple character. Tumours appear in one or more of the numerous regions of the body, and they may be developed either internally or externally; if internally, their existence may not be known of or even suspected, until after the death of the animal, when they may be discovered by an examination of the carcass.

Externally, melanotic deposits commonly appear in one or other of the following parts, viz.:—around the root of the tail; in close contact with the anus; within the mammæ; at the sides of the sheath; in the region of the flanks; amongst the loose tissues immediately behind the elbow joints; at the lower part of the trachea in front of the breast; and upon the sides of the head, in close contact with the parotid glands.

Internally, they may be found in close contact with the liver; within the omentum; amid the duplicate folds of tissue in close contact with the bowels; amid the lungs; around the substance of one or both kidneys; and, in short, of many other localities which it is unnecessary to enumerate.

Melanotic deposits are always manifested in a very slow insidious manner. At first they may appear as mere specks, which gradually increase to an uncertain size.

Pathognomonic Symptoms and Proofs.—*The animal being grey, and the colour of the hair disappearing. The insertion of the lancet into the growth will at once determine whether its contents are melanotic or not. The colour and consistency of melanotic deposits being that of black ink.*

Cause.—Professor Dick is of opinion that the deposit in these cases consists of the dark pigment of the hair. Instead of this pigment being distributed to the hair generally, it is, in consequence of some peculiar change arising within those tissues of the skin wherein the pigment in question is secreted, deposited locally as we discover it.

Treatment.—Deposits of the character above described cannot be treated, in the majority of cases, with any hope of permanent success. If they exist in localities where their presence may not interfere with the usefulness of the animal, it is better to leave them alone, especially if in close contact with important structures—such as the parotid gland, the base of the tongue, or amid the larger vessels and nerves of the neck. A horse affected with Melanosis may be a useful animal for years after the appearance of the deposit.

LYMPHITIS.

Lymphitis is a disease which, although without place in any of our standard veterinary books, is yet, upon the whole, well known, and is designated by a variety of names. In Scotland, for example, it is called *Weed;* while in various parts of England it is known as *Felltick, Thick Leg, Farcy, Water Farcy, Shot-o'-Grease,* and a number of other names which it is unnecessary to detail, and which, if detailed, would be impossible to understand Twenty years ago a Mr. J. Henderson, V.S., wrote a paper upon this affection, which the reader will find in the ninth volume of *The Veterinarian,* and from that time to the present it does not appear that our knowledge of its pathology is very greatly increased.

Symptoms.—The disease generally begins with a shivering fit, though, in many cases, its progress will be so rapid that its

commencement will not be noticed by any save a careful observer. Generally the attack is very sudden; the owner or the servant may go now, as it were, out of the stable, and leave his horse to all appearance perfectly well, and upon returning in an hour hence he will find him standing upon three legs, while the fourth will be flexed and held high from the ground; the pulse will vary in its beats according to the intensity of the attack, rarely, however, beating less than fifty, or more than one hundred per minute; while the respirations may be fifteen or twenty, or even forty, in the same interval of time. If the affected limb be examined, especially upon its internal surface, it will be found hot, swollen, and acutely tender, which symptoms for many hours may gradually increase in intensity.

Soon after the commencement of the disease, a number of vessels may be seen running across the limb in various directions, of about the thickness of a quill; they are most numerous, however, upon the inner surface of the leg, where they terminate in round or irregular formed masses, which masses are acutely tender if squeezed: these prominent vessels are the inflamed lymphatics, and the prominent masses alluded to are the inflamed lymphatic glands. Sometimes the swelling extends from the junction of the limbs with the body down to the very foot; at other times it only reaches down to the hock, and when very severe a sort of sweat exudes from the skin and lies upon the hair.

The coarser the breed, and the older the animal, the greater the liability to Lymphitis. Young coarse bred horses are also prone to it, particularly if highly fed and under worked; but in the young horse the disease, in the majority of cases, if not in all, quickly runs its course, and the affected limb becomes in time perfectly restored to its pristine condition, and if due precaution be taken the malady may not again manifest itself,

at least for years to come; while in old horses the diseased limb is seldom or ever reduced—it remains permanently thickened, and the animal is extremely liable to have acute or subacute attacks of the same disease periodically. In the majority of cases, again, the malady is usually confined to a hind leg, and that on the left side; sometimes both limbs are affected, but never, as far as I have seen, very acutely at the same time; the left limb might be attacked acutely, and some time afterwards the right one, but never both limbs simultaneously. I have also found that if the disease be treated according to the old mode, namely—by bleeding and purging, that horses so treated are more prone to be again attacked than if not so treated.

Pathognomonic Symptoms.—*The lymphatic glands situated at the top, and upon the inner surface of the limb affected, are enlarged, inflamed, and acutely painful.*

Causes.—The predisposing causes are simple; the chief of them are—peculiarity of breed; the regular giving of very nutritious food in too great abundance; previous attacks of the same disease; old age; and sudden changing of the animal from a poor to a rich diet. The immediate, or exciting causes, are—heavy blows upon the limbs; severe scratches and cuts; sudden over-exertion; working of the animal in water, or very wet ground; the sudden checking of old discharges from diseased limbs—such as grease, bad thrushes, etc.; allowing the animal to stand in cold draughts when perspiring freely, or checking the perspiration suddenly by riding him into a stream of cold water.

Treatment.—The best remedies and modes of treatment to pursue with this disease in general are—Aconite 2 and ⊖,

also Belladonna 1, Bryonia 1, Hot Fomentations, Aloes, Exercise, Cold Water Bandages, and Diuretics.

Aconite 2 *and* ⊖.—*Fomentations.*—In the more severe forms of the malady, and so long as its extreme violence continues, give the patient Aconite of the 2nd dilution every two hours, and frequently foment the limb with water, at a temperature of 120° Farenheit, for thirty or forty minutes at a time. Give the Aconite in 2-drachm doses, mixed with 6 or 8 ounces of cold water, and also make a lotion as follows and apply to the affected limb externally:—

Aconite ⊖	...	...	4 drachms.
Warm Water	...	...	1 pint.

Use a portion of this every hour, and apply it warm.

Belladonna 1 *and Bryónia* 1.—Upon the subsidence of the severer symptoms, recourse should be had to Belladonna and Bryonia. Give the Belladonna in 2-drachm doses of the 1st dilution, mixed with 2 or 3 ounces of water; also, Bryonia of the 1st dilution in 2-drachm doses, mixed with 3 or 4 ounces of water. These remedies should be given in alternation morning, noon, and night, and their use persevered in for several days in succession.

Aloes.—In those cases where the system of the patient is gross, and loaded with impurities, or where the diet has been too abundant, or where the disease has arisen in consequence of the sudden arrest of old discharges from the limb affected, a purgative should be given to the animal when convalescence is established. Barbadoes Aloes is the best purgative for the purpose; give 6 drachms for a dose. For instructions as to the management of the patient during the operation of the purgatives, see pages 76, 77, and 78.

Exercise.—When convalescence is established the patient should be gently exercised, weather permitting, two or three times a day, for twenty or thirty minutes at a time. Exercise will aid materially in dispersing the swelling and stiffness of the limb. If a purgative is given, the patient should stand at rest until its free action upon the bowels has subsided.

Cold Water Bandages.—When the patient is aged, or when the swelling is slow in being dispersed, have recourse to Cold Water Bandages. Apply them three or four times a week so long as necessary. When the bandages are not used wet (and it is not good to use them too frequently to the same patient), apply them dry, that is, during the time the animal is at rest.

Diuretics.—In those cases where the disease takes on a chronic form, and remains so, a Diuretic administered occasionally may prove of value. One of the best for this purpose is Tincture of Bryonia. Give it in 2-drachm doses of the strong tincture, mixed with 4 or 5 ounces of water.

Diet.—For instructions respecting the dietetic management of the patient during the acute and sub-acute stages of the disease, see Section VI., Page 108.

STRANGLES.

Strangles is a well known disease, and there are few individuals owning horses but who are familiar or imagine themselves familiar with it.

Mr. Percival classifies the malady as one peculiar to the lymphatic system: whether he is correct or not in so arranging it in all cases is a matter of doubt. I believe it arises in numerous instances from derangement which occurs amongst the molar teeth during the progress of horses from the first to the fifth year of their age.

Sometimes the affection is simple in its character, and mild in its effects; while in other cases it acts with a virulence upon the patient which is surprising.

Generally speaking, the local effects of Strangles are confined to the region of the larynx, and to the sub-maxillary space; sometimes, however, the tissues of one locality after another manifest a disposition to inflame, and the inflammation goes to the suppurative stage, so as to impress one with the belief that Strangles occasionally takes on a specific form of fever; the specificity of which consists in a marked tendency of the organism at such times to develope purulent deposits, which are limited in the general run of cases to the tissues of the sub-maxillary space; but on some occasions extending to other localities—such as the flanks, between the hind limbs at their junction with the trunk; also, at the bottom of the neck, and between the fore extremities.

Strangles is a disease which may be said to be peculiar to young horses, and analagous to measles in children. It attacks horses most frequently between the third and fifth year of their age, though sometimes before the former and sometimes after the latter; while occasionally we meet with a disease in old horses which, if not Strangles, is certainly closely similar to it. The disease sometimes occurs to young animals at grass, and sometimes it is developed soon after the colt is placed under the care of the breaker.

Many breeders of horses are of opinion that every horse is liable to Strangles, and that it is an effort of the organism to cast away collected impurities. Whether this opinion be one based upon correct observation I am unable to say.

In more violent forms of the disease, especially when confined to the sub-maxillary and laryngeal regions, it is very prone to leave the patient a Roarer, and to produce Spasm of the

Larynx. Strangles, when limited in its local effects to the sub-maxillary space, may be denominated *Regular*; but when its effects are manifested by the formation of Abscess in other localities, it is designated *Irregular* Strangles.

Symptoms.—The symptoms which characterise Strangles are different in some cases from what they are in others. One colt will be in full health to all appearance, as it were, to-day, and to-morrow he may separate himself from his companions, appear spiritless, carry his head low, be affected with a soft, sounding cough, and the appetite be but very indifferent. In the course of a day or two he will be found to gulp his water, and perhaps to have become more dejected, and in this state he may continue with little or no material alteration for six or eight days, at the end of which time a large tumour will have formed in the sub-maxillary space, which will ripen, burst, and discharge a large quantity of thick purulent matter. From this time he will generally improve in spirits, appetite, and bodily appearance, until he is restored perhaps to a state of health better than he possessed previous to the attack.

Should the larynx be affected with spasm, the breathing of the patient will be attended with a rough snoring noise, or as the closure of the glottis becomes more complete, with shrill whistling, or screaming sounds. See "Spasm of the Larynx," page 251.

Such are the symptoms and the course pursued by the disease in the majority of cases; others occasionally occur where the animal wastes; loses condition daily; his coat becomes dry, long, and staring; his skin is as though it was glued to his ribs; he creeps about the hedges and shady places away from his companions, where he can stand unmolested, and where he may remain for hours utterly indifferent to everything; if food

be offered him he picks amongst it in a very languid and dejected manner, or refuses it altogether; the pulse is fifty or even sixty beats per minute; the mouth dry and foul, and the mucous membrane of the eyes and lips presents a faint yellow tinge. In this manner the animal may continue until he becomes so feeble and so much reduced that he would die unless nutritious food was forced into him; generally, however, the disease takes what is called a "turn," which is manifested either by the sudden appearance and speedy development of an abscess between the jaws and around the region of the throat, or otherwise by a gradual improvement to vigorous health without the formation of any such abscess.

Symptoms of Irregular Strangles.—The Symptoms which are usually presented by Irregular Strangles will depend upon the locality in which the disease may become manifest. In the generality of cases, however, it will be easily recognised inasmuch as the effects of the malady are usually developed externally. If the breast of the animal, for example, should be affected, it will be known by the muscles of this region gradually losing their natural softness, and also that roundness of form which is so conspicuous in health. As the disease proceeds, the swelling becomes harder and more painful, especially if the head of the patient be elevated. The animal will stand as if rooted to one place for hours in succession; the appetite will be bad, the bowels constipated, and the urine scanty. The animal will also be unable to travel quickly; the steps will be short and slow, and the fore limbs will be placed wide apart; neither will he lie down, unless forced to do so by those in attendance. The pulse and respirations will be increased—in some cases considerably so. The swelling of the structures of the breast will present centres of hardness, and the enlargement generally will be hotter than the parts contiguous.

In this state the patient may remain for a considerable time; when, if proper treatment be adopted, recovery may gradually supervene, or the inflammation may become more active, and pass into the suppurative stage; in which case recovery will be doubtful, especially if the deeper seated structures are affected, and the purulent matter should be discharged into the chest.

PATHOGNOMONIC PROOFS.—REGULAR STRANGLES.—*The youth of the animal. The appearance of a purulent abscess, and development of the same within the sub-maxillary space.*

IRREGULAR STRANGLES.—*The youth of the animal. The appearance of purulent abscesses upon one or more localities of the body, associated with Strangles in its regular form.*

TREATMENT OF REGULAR STRANGLES.—The best remedies and modes of treatment to pursue with Strangles, in its regular forms, are.—Hepar Sulphuris and Mercurius, Sesquichloride of Iron and Iodide of Iron; also Blisters, Poultices, Hot Water Fomentations, Tracheotomy, Warmth, and a generous diet.

Hepar Sulphuris and Mercurius.—The administration of Hepar Sulph. is considered beneficial in aiding a rapid formation of purulent matter. It also relieves the soreness of the throat so common in this disease. Use it in 2-drachm doses of the 3rd dilution, mixed with 2 ounces of water; it may either be given alone, or in alternation with half-drachm doses of Mercurius of the 2nd trituration. If these remedies are used in alternation, give them morning, noon, and night.

Sesquichloride of Iron.—Iodide of Iron.—These are medicines to use when the patient is convalescent, especially if the animal is left by the disease in a weak and debilitated condition.

It is difficult to state, in every case, which of the remedies to prefer; sometimes one, and sometimes the other, is necessary. Use them in 2-drachm doses, mixed each time of their being given with 6 or 8 ounces of water.

Blisters.—A Cantharides Blister, if applied to the skin of the sub-maxillary space, during the incipient stage of the abscess, will frequently prove of signal service in hastening the formation of purulent matter. Before rubbing on the Blister, clip away the hair from the part. It is best, in every case of Strangles, to apply a Blister at once.

Poultices.—Upon the subsidence of the action of the blister, have recourse to hot Poultices, made of bran and boiled turnips; and renew them every six or eight hours, until the Abscess is ready to lance, which may be known by the soft, elastic condition of the tumour-like substance constituting the Abscess. When ready for opening, push a lancet into the most dependent and most elastic part of the swelling. Make a bold free opening; then with the index finger break up all the cells, cavities, and adhesions within, so as to effectually liberate the whole of the contained matter; after which apply a fresh Poultice, and continue to do so at intervals of ten or twelve hours, for two or three days in succession.

For all information necessary as to the preparation of Poultices, and the proper mode to apply them to the neck and to the sub-maxillary space, the reader is directed to turn to pages 149 to 154.

Hot Water Fomentations.—For all necessary information as to the application of Hot Water Fomentations to the neck, or in steaming the head, see pages 156, 157, and 249.

Tracheotomy.—When the disease is associated with Spasm of the Larynx, arising either from inflammation of the laryngeal tissues, or from reflex nervous action, it is better to open the

trachea, and insert a tube into it forthwith. My reasons for this I have fully explained in the article on "Roaring," pages 279 to 285.

After the insertion of the tube, look to its being securely tied, and also to its being thoroughly cleaned every twenty or thirty hours, so long as it is necessary to continue its use.

Warmth.—Warmth to the patient is essential to the cure of Strangles. When the patient is confined in a comfortless, cold, or damp stable, the progress of the malady is always slow and unsatisfactory. Warmth and comfort to the animal aid the rapid formation of purulent matter.

Diet.—A generous diet, associated with warmth, poultices, and blisters locally, will constitute, in the majority of cases, the only treatment necessary. For further particulars respecting Diet, see page 108.

Treatment of Irregular Strangles.—The treatment necessary to pursue with Irregular Strangles will depend upon the locality in which the disease may fix itself. If it becomes manifest amid the loose tissues of the flank, or within the loose tissues in connection with the sheath in horses, or the lymphatic glands situated near to the mammary glands of the mare, all that is possible should be done to encourage suppuration; but if the structures of the breast be attacked, all that is possible should be done to prevent suppuration; so that, in describing the treatment necessary to pursue in the latter form of the malady, I shall do it separately.

Treatment of Strangles affecting the Flank and Mammary Regions.—The best remedies and modes of treatment in general are— Hepar Sulphuris, Sesquichloride of Iron, Hot Water Fomentations, and Poultices.

Hepar Sulphuris.—For Instructions as to the use of this edicine, and proper dose to give, see page 418.

Sesquichloride of Iron.—For instructions relating to the use and proper dose of this remedy, see pages 418 and 419.

Fomentations.—For instructions as to the temperature of the water and other particulars in association, see pages 155 to 156.

Poultices.—An arrangement of material may be contrived to hold a Poultice to the mammary region. A piece of strong sacking should be made to pass under the abdomen, and firmly retained to the part diseased by means of straps passing around the body and secured upon the back; the poultices should be large, and made of bran, hot water, boiled turnips, and hog's lard.

Treatment of Strangles affecting the Breast.—The first essential to regard is the comfort of the animal. Place him in a loose box, which is roomy, and well littered with clean, dry straw; after which, every attention should be directed to aid and support the vital energies. If the patient does not lie down, he should be compelled to do so in the manner directed by Rarey, Telfer, and others—a plan which is now so well known as to need no further description.

Arsenicum and Belladonna.—Arsenic is an invaluable remedy in cases of this nature. Use it of the 3rd dilution, in 2-drachm doses, mixed with 2 or 3 ounces of water. A dose may be given morning, noon, and night, for several days in succession; or it may be given in alternation with Belladonna of the 1st dilution, in 2-drachm doses, mixed with a like quantity of water. If the two are used, give them in alternation morning, noon, and night. The Belladonna is to arrest the formation of purulent matter.

Fomentations.—The breast should be fomented occasionally with water, at a temperature of 166° Fahrenheit.

Diet.—The diet should consist of boiled oats or barley, or beans mixed with bran and chopped hay. Milk may also be allowed, and cold water. A small quantity of malt mixed with bran may be given occasionally with advantage; also carrots, if in season.

When convalescence is established, a few doses of the Sesquichloride of Iron may prove of value. For further particulars respecting the diet of the patient, see Section VI., page 108.

MYOSITIS:

INFLAMMATION OF THE MUSCLES.

Myositis, or Inflammation of the substance of one or more of the voluntary Muscles, is an uncommon affection, and one not hitherto treated upon in any of our regular works upon veterinary medicine.

Sometimes this affection is limited to the muscles of the shoulders and chest, of one or both sides. In other cases all the principle voluntary muscles of the organism are more or less involved.

In treating upon the malady I shall consider its effects when presented locally; and also the symptoms by which it may be recognised when the muscular system at large is affected.

Myositis is very likely to be mistaken for Rheumatism, or Pleurodynia, or Pleuritis, or Inflammation of the Lungs, or even Inflammation of the Laminæ of the Feet; close observation, however, together with *a careful inquiry* as to the cause, will enable the veterinarian to arrive at correct conclusions as to the nature of the case before him.

CAUSE.—I only know of one cause of Myositis, and that is—exerting the animal beyond its natural powers. Taking a horse which may have been used for several months, or even years, at slow work, and without a moment's preparation driving him with great speed for a considerable distance; or subjecting a horse to the same treatment immediately after taking him from a long run at grass, is all but certain to produce the malady in question. One of the worst cases of the disease I ever saw, occurred to a mare which was taken from slow work, to which she had been used for some time. She was put into the shafts of a gig, and driven five miles and a quarter over a hilly country in twenty minutes. The same cause is also just as likely to produce inflammation of the feet.

Hunters, race horses, and cab horses, are perhaps more frequently affected with Myositis than any other class of animals. In certain cases where the patient has died, I have found the following appearances:—muscular tissue lacerated and softened, and attended with an effusion of serum and dark blood like stains in the muscular substance.

SYMPTOMS OF LOCAL MYOSITIS.—The muscles most frequently affected locally are those of the shoulders—such as the *serratus magnus*, the *latissimus dorsi*, and the *extensor brachii*.

The pulse and respirations are always disturbed: the degree of disturbance depending upon the amount of injury inflicted upon the muscles; the breathing is short and hurried, but the respiratory murmer is clear throughout the chest, except when the disease is associated with Pneumonia or bronchial disease (which it sometimes is), when mucous râles within the trachea and bronchial tubes will be present. If not associated, however, with either of these maladies no such sounds will be heard,

but towards the bottom of the chest the healthy murmur is frequently associated with a buzzing or humming noise, which arises from muscular tremor. The skin over the part diseased is contracted into folds, and the affected tissues are swollen, and warmer and firmer than natural; the animal shrinks if the sides of the chest are pressed, and frequently emits a low grunt; the movements are performed reluctantly, and with a short paddling gait; and the extremities are generally cold.

Pathognomonic Proofs.—The proofs are of such a character that by careful attention the matter is rendered one of certainty. *Has the patient been very recently subjected to excessive and long continued exertion, especially in harness? and are the sides, or parts affected, swollen, hot, and tender?*

Symptoms of General Myositis.—The animal, if made to walk, performs the act slowly, and steps out timidly; or if left alone, stands for hours in succession as if rooted to the place; the pulse generally beats from fifty to sixty, or sixty-eight per minute, and the respirations are usually from thirteen to sixteen or eighteen; the abdomen presents a peculiar contracted condition; the skin seems as though it was literally glued to the flesh and to the bones; the hair is dry, and harsh to the touch; the bowels are constipated, and the urine is scanty and high coloured; the animal shrinks if handled or pressed upon; the appetite is bad; now and then the horse will pick a small portion of hay, and he does not lie down.

A patient affected with a severe form of Myositis appears as though suffering under a combination of the diseases, Tetanus and Rheumatism.

Pathognomonic Proofs.—*Has the patient been very recently subjected to excessive and long continued exertion, especially*

in harness? Does the animal walk slowly and step out with fear? Do the trunk and limbs present a contracted appearance?

TREATMENT.—The best remedies and modes of treatment in general are—Barbadoes Aloes, Arnica ⊖ and 1, Rhus Toxicodendron 1, Fomentations, and turning the patient to grass.

Barbadoes Aloes.—The administration of a purgative in these cases will generally prove beneficial. The size of the dose will depend upon the size of the animal; from 4 to 6 drachms, however, will constitute the average quantity. For particulars as to the treatment of the patient during the operation of the purgative, see pages 75 to 77.

Arnica ⊖ 1.—Apply Arnica lotion to the structures injured in Local Myositis. Prepare the lotion as follows:—

Tincture of Arnica	...	...	6 drachms.
Water	...	...	...	1 pint.

Mix the two together, and apply a portion five or six times a day. Use it warm. After the operation of the purgative, the administration of Arnica, internally, may be steadily pursued, and adhered to for some time. Use it of the 1st dilution in 2-drachm doses, mixed with 3 or 4 ounces of water. The repetition of the dose will depend upon the violence done to the muscular tissues. If the affection be *general*, repeat the dose every four hours, for three or four days at the commencement; or if it be local, but severe, administer it as frequently, and for a similar period, after which it may be repeated twice or three times a day for several days longer.

Rhus Toxicodendron.—Sometimes Rhus Tox. produces a better effect in these cases, if given internally, than Arnica. Use it of the 1st dilution in 2-drachm doses, and repeat it according to the directions already stated for Arnica.

Fomentations.—Few things will tend more to sooth the patient, whether the affection be local or *general*, than Fomentations. If the affection be systemic, fold large woollen rugs, previously dipped in water at a temperature of 114° Fahrenheit, around the animal. If the affection be local, fomentations can be more readily applied.

After fomenting the body at large, the patient should have a cold shower bath: a contrivance for this purpose may be easily devised; and immediately after the shower bath, the animal should be briskly rubbed with dry coarse cloths, and then covered with dry woollen clothing, and left alone for several hours.

Turning the Patient to Grass.—Myositis, be it understood, is an affection difficult at times to cure: considerable patience will be required ere the animal is restored, and not unfrequently all remedies of an ordinary character prove of little or no avail. The malady cannot be eradicated by storm. The patient lingers, and the owner perhaps becomes impatient. The best plan to pursue, under circumstances of this nature, is to turn the animal to grass—that is, if the season be favourable. A run of two or three months' duration is generally necessary to accomplish what is desired.

Diet.—For particulars with regard to the diet of the patient, see Section VI., page 108.

CHILL.

I use the above term to designate an affection, or rather a *state*, which may terminate either in direct recovery, or in the manifestation of an inflammatory disease of some important organ or set of organs. When this particular state is present it is impossible to say, with positive certainty, whether further derangement or not will ensue; all that can be said is, that an abnormal effect is produced, which may terminate in this or

that direction, according to the constitutional force of the animal—to the predisposition of any organ or set of organs to become affected in any particular manner—and to the treatment which may be pursued at the onset.

Symptoms.—The first symptoms, which are usually observed before the chill proper sets in, may be thus described:—dullness or want of spirits upon the animal entering a stable after a journey; hanging of the head; standing fixedly in one place; taking little or no notice when spoken to; smelling at the food; picking amongst it perhaps for a short time, and then leaving it altogether. In addition to these, the eye is dull, and the countenance dejected; the animal grinds his teeth, and breathes quicker than usual, while the pulse is seldom or ever disturbed at the commencement. Presently his coat will begin to prick, and at the same time he will begin to tremble with considerable violence; his breathing will become more hurried, and this will be attended with a harsh, blowing sound in the nasal passages; the pulse all the time will retain its usual slow, regular beat. This chilly state may continue from half an hour to two hours, or more—when the patient becomes quieter, the breathing softer, the skin and extremities warmer; and the pulse rises to fifty, or even sixty beats per minute. From this condition, if the animal be judiciously treated, the attack may gradually pass off, and perfect recovery speedily ensue; or it may pass into Catarrhal Fever, or Pneumonia, or Bronchitis, or Lymphitis, or Laminitis, or Inflammation of the Bowels, or—what is very common—a bad, obstinate Cough.

Causes.—The causes of Chill may be stated in a few words, viz.:—exposing the animal to cold draughts; allowing him to drink freely of cold water, in very hot or during very cold weather; exhausting him with labour, and then placing

him in a damp stable; washing the limbs with cold water, or riding him (while in a state of perspiration) into a stream of cold water.

Treatment.—The best remedies, in general, are Aconite and Aromatic Ammonia.

Aconite.—Two or three doses of Aconite will generally suffice to restore the patient, unless the case be one of more than ordinary severity. Use the remedy in 2-drachm doses of the 1st dilution, mixed with 6 or 8 ounces of water. The dose may be repeated every thirty or forty minutes, until a change for the better is observed.

Aromatic Ammonia.—Sometimes the Aconite fails to produce the desired effect; when this is the case, have recourse to the ammonia. The proper size of dose will depend upon the size and breed of the animal; 6 or 8 drachms, however, may be given with safety in a pint of cold water. If it should be necessary to repeat the Ammonia, half the quantity above prescribed may suffice.

Clothing.—The patient should be well clothed with warm, comfortable clothing; and, when convalescence is established, warm gruel may be allowed the animal to drink. Should the patient be affected with Cough, see article "Cough," page 286, and treat the animal as there directed.

LAMINITIS.

INFLAMMATION OF THE LAMINÆ OF THE FEET.

Laminitis is a disease less frequently seen than formerly. It is exceedingly painful in its acute forms, and tends to utterly destroy the usefulness of the animal.

Inflammation of the Feet, of the Bowels, and of the Lungs, may be fairly set down as three of the most violent and

dangerous diseases to which the horse can be subjected. A horse suffering from a severe attack of Laminitis literally appears to melt before the vision of the observer.

Heavy draught-horses, and horses having flat soles and weak hoofs are the most subject to the malady.

The disease presents itself under two forms—viz., Acute and Sub-acute Laminitis.

The fore feet are far more liable to suffer from the disease than the hinder ones; and this may arise from the former being more subject to concussion than the latter. In progression, the hind limbs *propel* the body, while the fore limbs carry its weight, and receive the concussion which results from locomotion.

It is not common for both the fore and hind feet to be attacked with Laminitis at the same time. Sometimes (especially in Metastatic Laminitis) the disease will cease in the fore feet, and appear in the hind ones; and it is more uncommon still to find Acute Laminitis confined to one foot only.

Symptoms.—The symptoms of Acute Laminitis differ according to the stage at which the disease may be seen. The early symptoms are—the animal being dejected; occasionally breathing quicker than ordinary; appearing anxious; and frequently shifting his position. If taken out of the stall, and made to walk, he does so with pain and reluctance; he steps short, and paddles in his gait; the feet also are warmer than natural.

As the disease progresses, the breathing becomes more hurried, and the pulse greatly quickened; in some instances it may reach as high as ninety, or even one hundred beats per minute. The movements of the animal are peculiar, and, to a close observer, at once indicate the nature of the malady. The

patient does not lie down; and if the laminæ of the fore feet are inflamed, the hind limbs are brought forward, and placed well under the belly; the fore feet are frequently shifted; the knees are maintained in a semiflexed position; while the little weight which they are obliged to sustain is sought to be thrown either on the outer sides of the feet, or the points of the toes. The hoofs are of an unnatural heat; the limbs swell from the knees to the coronets; the arteries of the limbs affected, throb with more or less violence, according to the violence of the disease; and if the feet be smartly tapped with a hammer, the patient either will suddenly drop to the ground, or emit a low groan. Sometimes the nose is brought down close to the feet, and these organs are regarded with a countenance which manifests a painful anxiety.

In the more severe forms of the disease, the animal perspires profusely; drops of clear water chase each other rapidly down the hairs of the mane and tail; the eyes are wild, haggard, and blood-shot; the bowels are constipated, and the secretion of urine suppressed.

Pathognomonic Symptoms.—The Pathognomonic Symptoms are—*throbbing of the arteries of the limbs affected, associated with unnatural heat, and excessive tenderness of the feet.*

Terminations of Laminitis.—The terminations of Acute Laminitis require to be noted. The disease may terminate in several modes. 1st—In *resolution:* that is, in a return of the feet to their normal state. This result, however, is not common. 2nd—In the hoofs being sloughed away, and in the death of the patient. 3rd—In the soles of the feet descending.

This is a common termination, and one which may ever afterwards render the animal useless, even for the performance of slow work upon soft ground; while the more favourable forms of it disqualify the animal, in a great measure, for rapid locomotion especially upon hard macadamized roads. 4th—In the hoofs being gradually cast, and new ones being as gradually reproduced. From the commencement to the completion of this termination, a period of ten or twelve months will be necessary. 5th—In the sub-acute and chronic forms of the malady: in this state the animal may remain for an uncertain period.

CAUSES.—The causes of Laminitis are numerous. *Concussion* is the most common, especially when acting in association with exhaustion of the vital powers generally, and of the feet in particular; and this is very likely to happen from riding or driving the animal inordinate distances. Exposing the feet to severe cold; as for example, when the animal is compelled to stand for a long time in half-melted snow, and then being suddenly removed to a close, warm stable. The animal being prevented, for a long period, from lying down, either in consequence of disease, or from being confined on board a ship.

Indigestion, either from causes which have been in operation for a long time, or from those of a recent character—such as the eating of wheat, or gorging the stomach in consequence of getting to the corn chest during the night. Indigestion is a more common cause of this disease than is generally supposed. Young horses kept for a time in loose boxes, and made fat with soft food to prepare them for sale, are very prone to manifest Laminitis if suddenly put to work, especially if this is associated with change of diet. Many young horses have died from inflammation of the feet arising from this cause; and the

sellers of them have afterwards been condemned as dishonest traders, and then compelled to refund all the purchase money.

Metastasis, or the transition of disease from one part of the organism to another—as, for example, from the bowels to the feet; or from the lungs to the feet is another, but not a frequent cause of Laminitis: whenever it does occur, however, it is invariably associated with excessive constitutional debility.

Treatment.—The treatment of Laminitis, like all other diseases, should have strict reference to its cause. When the malady arises from acute or chronic disease of the digestive organs, or from general debility causing Metastasis, it will be evident that if we intend our curative efforts to prove successful, we should direct them partly to the digestive organs, or to the removal of the constitutional debility, as the case may be. Even in those cases which may appear to solely arise from the animal being over-driven—or, in short, from any other cause of an external nature—the careful practitioner will never lose sight of these facts.

Another matter of great importance also requires to be noticed ere we enter upon the general question of treatment—viz.:—patients affected with this disease seldom or ever lie down, either at the commencement or during its most violent stages. Many practitioners, in consequence of this, recommend laminitic patients to be slung; but slinging horses ought never be resorted to in disease, except under circumstances of the most urgent character, and then only for as short a period as possible. The proper way to act is to lay the patient down, according to Mr. Rarey's plan; and in cases of acute Laminitis, very little trouble suffices to effect this. Buckle up a fore-leg, and hold the patient steady, and in a few minutes he will drop upon his side—almost without a struggle.

The best remedies and modes of treatment to adopt in general, are—Nux Vomica, Arnica, Aconite, Barbadoes Aloes; Ice to the Feet, Hot Fomentations, Poultices, Rasping and Paring the Feet, and Bleeding locally.

Nux Vomica and Aconite.—When the affection arises from Acute Indigestion, or when it is aggravated by disease of the stomach, Nux Vomica and Aconite will be excellent remedies to give internally. Use the Nux in drachm doses of the 1st dilution, mixed with 3 or 4 ounces of water, and repeat it every three or four hours; or it may be given in alternation with Aconite 1, in drachm doses, and repeated every two hours.

Barbadoes Aloes.—A purgative is occasionally of great service in this disease—especially if it arises from gorged stomach, or from the animal having eaten wheat. The size of the dose will depend upon the breed and size of the patient: 8 or 10 drachms of the drug will be necessary for large, heavy draught-horses; and if the purgative should fail to operate in fifteen or twenty hours after its administration, give drachm doses of Aloes every three hours, until purging commences: during the operation of the purgative, the use of other remedies may be suspended. For further instructions relating to purgative medicine, see pages 75, 76, and 77.

Ice to the Feet.—Hot Fomentations.—The adoption of one or other of these modes will depend upon the vital condition of the patient, and of the structures locally diseased. If the constitutional debility be excessive, I am of opinion that hot water is the best to apply, if not throughout the disease, at least during its early stages. On the other hand, where the disease may have arisen from the operation of intense cold upon the feet, warmth suddenly applied would in all probability be injurious. In all cases where the constitutional energies are

feeble, or where the disease does not arise from excessive cold, as a general rule I should recommend Hot Water Fomentations to the feet, in preference to Ice or Cold Water.

For all necessary instruction as to the application of Fomentations and Poultices to the feet and limbs, see pages 149 to 156.

Rasping and Paring the Feet.—Many veterinary surgeons recommend the soles of the feet to be pared, and the crusts to be rasped, until the structures operated upon spring when pressed upon; as a rule, however, I dissent from such a practice. Pare the sole until it springs, but avoid rasping the crust to any considerable extent. When this latter operation is done to excess, it favours the disorganization of the laminæ, and the descent of the sole.

Bleeding from the Foot.—Bleeding from the toe, or from the artery at the side of the sole, will often prove of signal benefit in Laminitis. It is a bad practice, however, to abstract blood at the commencement of the malady. If the laminitic inflammation be associated with a vigorous state of the system, let the disease exhaust its violence to some extent before the abstraction of blood is effected;* while, if the vital energies are feeble (which is always the case in the metastatic forms of the malady), to bleed at any time under such conditions will be productive of more harm than good. As a rule, then, in cases of Laminitis where bleeding is necessary, allow the disease to have been from six to ten hours in existence; and do not operate then unless the pulse has become hard, firm, and wiry. The

* Perhaps the reader may exclaim—why not bleed at the commencement of the attack, and prevent the violence to which you allude? In reply, I have simply to observe, that it *cannot, in the majority of cases, be so prevented.* For a more complete exposition of the principle of treatment now laid down, the reader is directed to pages 70 and 71 of my "Principles and Practice of Veterinary Medicine and Surgery." London: J. Churchill, 1858.

quantity of blood necessary to take away will depend upon circumstances; perhaps two quarts from each foot—perhaps less. When the patient is bled, however, and the wounds made secure, lay the animal down upon a comfortable bed of straw; then darken the box, and leave him to rest.

DIET.—The patient should have gruel to drink, made according to the directions given at pages 112 and 113; also boiled corn and bran, carrots, boiled turnips, or a little boiled barley. When the disease arises from Metastasis, the patient should be supported with eggs and milk; bread and milk and wine may be given occasionally.

For further directions as to diet, see Section VI., page 108.

CLOTHING.—Avoid clothing the animal too heavily; clothe according to the season, and the bodily condition of the patient.

RHEUMATISM.

Rheumatism is a malady which is common to young horses; sucking foals are exceedingly liable to the affection. In them it presents itself in a form termed "Joint Evil." Old horses, however, are not exempt from rheumatic diseases.

Acute Rheumatism is, on some occasions, remarkable for the extraordinary manner with which it changes from one locality of the organism to another. In other forms of the malady, the system generally is affected. In both conditions, however, it is associated with inflammatory fever, more or less intense.

Acute Rheumatism is sometimes preceded by a smart attack of Pleuritis (Pleuritic Rheumatism); in other cases the two are associated. I never knew Rheumatism, however, to terminate in Pleuritis.

In the Acute forms of Rheumatism affecting the joints, especially the knee or the hock joints, distention of the synovial

cavities and thickening of the vascular tissues are consequences which frequently supervene. The distention and thickening of these tissues often become permanent.

Well-bred horses are more subject to the malady than draught horses.

The duration of the disease is from one to three, or even four weeks—*i.e.*, from its commencement to the complete recovery of the animal. In describing the disease, I shall consider it as being presented under two varieties:—1st, as Acute; and 2nd, as Sub-acute Rheumatism.

Symptoms of Acute Rheumatism.—Acute Rheumatism not unfrequently supervenes upon Epizootic Catarrh; and, in doing so, it may appear either as Pleuritis (Pleuritic Rheumatism) in the first instance, or it may manifest itself in the limbs; or the former may terminate in the latter. If in either form, however, the attack will generally be sudden and extremely severe.

The patient, to all appearance, may be recovering, when suddenly he will commence breathing quick; the breathing will be attended with frequent sobs, and at times it may take on a spasmodic action; the pulse will be peculiar—beating, for a short time, strong and rapid; the action will then become slow, soft, and gentle; then violent and rapid as before.

The respiration will be attended with frictional sounds within the chest; the patient will stand rooted, as it were, to one place; the skin will be covered with patches of perspiration, and the animal will sometimes be irritable in temper.

In this state the animal cannot long remain. Unless relief be afforded, the vital energies will sink under the violence of the attack. The pulse will, on some occasions, rise as high as ninety or one hundred beats per minute; the patient will grind

his teeth, and the thirst will be excessive. A half-conscious state may supervene, and death speedily result; or—what more frequently occurs—the violent symptoms referrible to the heart and the pleura will disappear, and the disease is transferred to a hind limb, the joints of which swell, become hot, and acutely painful.

In this manner the disease may hold its course until it has invaded every limb in succession; when its violence may subside, and the patient gradually recover.

SUB-ACUTE RHEUMATISM.—Sub-acute Rheumatism differs principally from the acute form of the disease in possessing a more diffusive character; the pain is not so excruciating; the pulse is softer, more regular, and not so quick; and it is also the most common form in which the malady is developed.

It is manifested, for the most part, within the muscles and the facia of the loins and hind extremities. The patient, to use common phrases, is "shoulder-tied," or "loin-bound." It is with difficulty the animal can be made to move from one place to another. The appetite is bad, and the temper of the patient, on some occasions, is excited. He will snatch and bite savagely at those who touch or approach him.

PATHOGNOMONIC SYMPTOMS.—*The animal is suddenly attacked with lameness in one or more of the limbs, associated with inflammation, swelling, and acute pain within the joints. The disease shifts out of one limb into another.*

CAUSES.—The causes which excite and predispose the system to Rheumatism are numerous. Epizootic Catarrh is a predisposing cause of this character; also regularly keeping

horses in stables which are damp and ill-ventilated; while, as exciting causes, I may enumerate the prevalence of east winds; exposure of the animal, when prespiring, to cold draughts; also long exposure of the animal to cold and wet in association; also irritation of the system from superpurgation.

TREATMENT.—*Warmth, dryness, and comfort, within the habitation of the patient,* are essentials highly necessary to the cure of Rheumatism.

The best remedies and modes of treatment, in general, are —Aconite, Arnica, Belladonna, Bryonia, Colchicum, Rhus Toxicodendron, Cantharides, and Rhododendron; also Mustard Embrocations, Hot Water Cloths, and Warm Lotions.

Aconite and Arnica.—These are excellent remedies when the disease is of a sub-acute character; and when it has arisen in consequence of recently exposing the animal to cold and wet, or to cold draughts of wind.

Use each remedy in 2-drachm doses of the 1st dilution, and give them in alternation, at intervals of three or four hours.

In the severer forms of the disease, or where it is associated with Pleuritis and with disease of the heart, Aconite will constitute one of the principal remedies; it may be used both internally and externally. Make the lotion as follows:—

Tincture of Aconite	...	...	2 ounces.
Soft Water	...	...	1 gallon.

Mix the two together; and, immediately before using the lotion, warm it to a temperature of about 116° Fahrenheit, and apply it (where practicable) to the swollen limbs, by means of woollen bandages dipped in the warm fluid.

Belladonna and Bryonia.—Sometimes a change from Aconite to Belladonna and Bryonia, will prove of benefit to the patient. Use the Belladonna of the 1st dilution, in 2-drachm doses, every two or three hours. Use the Bryonia in like quantity, of the 1st dilution. The two may be given in alternation; or either of them may be alternated with Aconite.

Colchicum.—This remedy will prove valuable when the hock and the fetlock joints are more particularly involved. It may also be tried in the sub-acute form of the disesse. Use it in 2-drachm doses of the 1st dilution, mixed with 2 or 3 ounces of water. The dose may be repeated every three or four hours; it may either be given alone, or alternated with any of the medicines named.

Cantharides.—In two or three cases of Sub-acute Rheumatism, I have used Cantharides in 1-drachm doses of the 1st dilution, in alternation with Bryonia of the 1st, and with benefit. The use of Cautharides is indicated when the skin is dry, the fever acute, associated with suppression of the urine. Cantharides requires using with considerable caution. If the remedy is given alone, dilute it freely with water. The dose may be repeated every four or five hours.

Rhus Toxicodendron and Rhododendron.—These are remedies for the disease, should it become chronic. Use them in 2-drachm doses of the 1st dilution; they may either be given alone, or in alternation with each other.

Mustard Embrocations.—Mustard, as a counter-irritant to the chest in Pleuritic Rheumatism, will sometimes prove of great benefit. For proper directions as to the preparation and mode of applying the Mustard, see pages 159 and 160.

Diet.—The diet of the patient should consist of milk, milk and water; also gruel, prepared as directed at page 112. Green clover or carrots may be allowed, if in season.

For further particulars relating to the diet, clothing, and housing of the patient, see Section VI., page 108.

Joint Evil.—Before concluding the present article, it is necessary to offer a few directions with respect to the treatment of Joint Evil, as it is a form of Rheumatism very destructive to young animals. Sucking foals are exceedingly delicate animals, and when attacked with acute disease, their life powers readily succumb; so that our treatment is more a question of hygiene than of medicine.

TREATMENT.—The swollen joints should be bathed with the Aconite lotion, prepared as directed above; after which the joints should be folded with thick layers of cotton wool, and the patient should be kept dry and comfortably warm.

The remedies best adapted in general, for these cases, are—Aconite, Belladonna, Bryonia, and Colchicum. Use them of the 1st dilution, in doses varying from 20 to 30 drops, mixed with a little water. Each remedy may be given alone, or two of them may be given in alternation.

DIET.—Small quantities of food should be frequently given to the patient. It should consist of sago and milk, or of equal parts of thin flour gruel, boiled linseed, and milk; it may be given by means of a sucking bottle. Should the bowels of the patient become constipated, a small quantity of treacle mixed with the diet will sufficiently relax them.

COMMON OPTHALMIA.

The eye of the horse is neither so liable to disease nor is it affected with so numerous a class of maladies as the human eye.

The disease I am about to describe is known by a variety of names; sometimes it is called Catarrhal Opthalmia; also,

Common Inflammation of the Eye; and at other times Simple Opthalmia, in contradistinction to another form of inflammatory disease of the eye called Specific Opthalmia.

Symptoms.—The symptoms of Common Opthalmia are swelling and closing of the eyelids, associated with an abundant secretion of tears which flow down the cheeks, and produce a scalding effect upon the skin of the cheeks and of the parts contiguous. If the eyelids are opened, the mucous membrane will be seen to be congested with innumerable blood vessels, associated with dimness of the cornea. Sometimes the patient is affected with cough, and sometimes not; and occasionally the above symptoms constitute the most prominent features in Epizootic Catarrh.

Causes.—Exposure of the animal, when perspiring, to cold draughts; and to the combined effects of wet and cold. The disease sometimes prevails as an epizootic.

Treatment.—See Article "Traumatic Opthalmia," Section VIII. See also Article "Epizootic Catarrh" (treatment of) page 228,

SPECIFIC OPTHALMIA.

The best and most complete account of this disease which has hitherto appeared from the pen of any English veterinary writer, is that which was written by the late Mr. W. Percival, and which is published in the third volume of that author's work, entitled "Hippopathology." The article treating upon the disease in question is written with great clearness, and is faithful to a degree; it is one of those diseases, in fact, upon which I should naturally expect Mr. Percival, when living, to have written soundly and excellently.

Symptoms.—It is unnecessary, in a work like the present, that I should detail every symptom in association with the above-named peculiar type of Opthalmia; I shall content myself with merely pointing out the principal differences which exist between the specific and the common forms of the malady.

Specific Opthalmia is distinguished from the common forms of the disease principally by the following peculiarities:—

I.—The disease is periodic in its attacks; hence the name which is sometimes given to it—Periodic Opthalmia.

II.—It is generally manifested suddenly, and it is also a metastatic affection; that is, it may suddenly disappear, out of one eye, and as suddenly appear in the other.

III.—It is attended with more or less febrile commotion of the system, especially at the onset of the disease.

IV.—It generally passes into a chronic condition, in which condition its duration is uncertain. Sometimes it slowly disappears, and at other times it again suddenly takes on the acute form.

V.—It is rarely attended with that swollen condition of the eyelids, or that excessive secretion of tears which accompanies the more common forms of Opthalmia.

VI.—It is prone to terminate in Cataract, and in complete blindness of one or both eyes.

VII.—The predisposing causes of the disease are constitutional; and they are also hereditary.

PATHOGNOMONIC PROOFS.—*The disease is manifested periodically, and it generally attacks the deep seated tissues of the affected organ.*

TREATMENT.—The best remedies and modes of treatment in general are—Aconite, Arsenicum, Tincture of Iodine, Nitric Acid, Chlorate of Potass, Ammonia Citrate of Iron, Nux Vomica, China, and Sulphur.

Aconite.—Arsenicum and Belladonna.—Aconite is indicated at the commencement of the disease, especially when the malady is associated with a high degree of fever. The fever cannot in these cases be regarded as sympathetic of the inflammation of the eye; it is, in my opinion, to be considered as an integral part of the disease. Use the Aconite in 2-drachm doses of the 1st dilution, and give it to the patient morning, noon, and night. A lotion of Aconite may also be used to the eye, consisting of Tincture of Aconite 4 drachms, mixed with a pint of water, which should be applied to the eye three or four times a day by means of a small broad-ended syringe. The Aconite may either be given alone or in alternation with Arsenicum 3 in 2-drachm doses, or Belladonna 1 in 2-drachm doses.

Arsenicum is indicated both in the acute, sub-acute, and chronic forms of the disease; in the latter it may be given with advantage in alternation with the Ammonia Citrate of Iron. The use of the two should be steadily persevered with for at least two or three months in succession. Use the Arsenicum in 2-drachm doses of the 3rd dilution, and the Iron in 2 or 3-drachm doses. The patient should have about two doses of each kind of medicine per week.

Chlorate of Potass.—Nux Vomica.—China.—Sulphur.—These are all excellent remedies to give in Specific Opthalmia, especially in the chronic forms of the disease. Give the

Chlorate of Potass in 2-drachm doses, and repeat it every thirty or forty hours for four or five days in succession; or it may be given in alternation with China or Nux Vomica. Sulphur is also an excellent remedy; give it in 2-drachm doses of the 1st trituration; its use should be continued for some time.

Diet and General Management.—The diet and general management of the patient are matters which require close attention on the part of those having the care of horses affected with this disease. Derangement of the stomach will aggravate the disease, and the least undue exposure of the animal to cold and wet is almost certain to be followed by an acute attack of the disease. The vital energies of the patient should therefore be sustained to the utmost, and every precaution taken to guard the animal against unnecessary exposure.

OPACITY OF THE CORNEA.

Opacity of the Cornea is very frequently the effect of an attack of Opthalmia arising either from the common or the specific forms of the disease. Sometimes the opaque condition of the Cornea is speedily removed by absorption without any treatment whatever; at other times it remains, when active treatment, with a view to its removal, becomes necessary. It is desirable to remove it because the opacity frequently causes horses so affected to shy a great deal, and they are rendered dangerous in consequence.

One of the best remedies for this purpose is the Tincture of Iodine, which should be applied directly to the surface of the eye by means of a fine camel's hair pencil. The application should be repeated two or three times a week, for two or three weeks in succession if necessary; giving to the animal at the same time 4-drachm doses of Iodine of the 1st dilution, mixed with 4 or 5 ounces of water, for a like period.

NYMPHOMANIA.

By the term Nymphomania, I mean that morbid condition of the sexual organs of the mare which continues after the proper season is past for the animal taking the horse.

It is a morbid condition which is not only annoying to the mare, but sometimes it renders the animal dangerous to the owner and to those in attendance.

TREATMENT.—The best remedies in general are—Tincture of Cantharides, Murex Purpura, and Aloes.

Cantharides.—Sometimes a single dose of this remedy will remove the affection; and sometimes many doses of it are not productive of the least beneficial effect. Give the tincture in 2-drachm doses, mixed with 6 or 8 ounces of water. The medicine should be given to the mare when the stomach of the animal is empty. Should it fail to produce a beneficial effect, have recourse to the Aloes as a purgative.

Murex Purpura.—Have recourse to the Murex after the purgative has been given and its effects have subsided. Give it in 2-drachm doses of the 3rd dilution, mixed with 3 or 4 ounces of water. Repeat the dose once a day for several days in succession. The animal should also be fed sparingly.

GLANDERS AND FARCY.

It is not my intention to occupy the reader with any very lengthy observations of my own upon Glanders and Farcy; want of space forbids it upon the present occasion.

Glanders and Farcy are different forms of the same disease. Glanders may first appear, and Farcy supervene; or what is called Farcy may first appear, and Glanders supervene. Farcy is simply a tertiary form of Glanders.

Glanders is a disease of the blood, and the inveterate forms of the malady are those where the nutrition of the tissues of the body have become contaminated; as the nutrition, in fact, of the more remote tissues become affected, the blood necessarily becomes more and more loaded with poisonous materials, and the disease will become more and more virulent in its effects.

Glanders is sometimes developed with extraordinary rapidity. This is more particularly the case with animals kept in closely confined and ill-ventilated stables; in other cases, again, the disease for sometime may be slow and insidious, and then suddenly become virulent.

The disease is highly contagious, not only to other horses, but to human beings also.

Causes.—The causes of Glanders are innumerable; but any influence upon the animal economy, the operation of which lowers the vital force, acting in association with bad ventilation and imperfect purification of the blood, will favour the development of this disease.

Pathognomonic Symptoms of Glanders.—The pathognomonic symptoms of Glanders are *ulceration of the nasal membrane, associated with purulent discharge from one or both nostrils; with enlargement and hardness of the sub-maxillary glands, and fixedness of the same to the internal surface of the inferior maxilla.*

The ulcer, which is pathognomonic of Glanders, presents (especially in the more advanced stages of the disease) the following peculiarities:—

It is chancrous; of a dull red colour; ragged and angry looking; irregular in form and size; fungoid in appearance;

having minute vessels passing towards it which present a venous character conjested with blood having a venous appearance, and which bleed upon the slightest irritation.

TREATMENT.—Having satisfactorily determined the disease to be Glanders, the best course to pursue is to destroy the animal affected forthwith. The liability of the malady to spread to other horses, and the great danger of its being communicated to human beings, renders the destruction of the patient imperative.

In conclusion, I may observe, that in my opinion hundreds of cases of Ozena have been mistaken for Glanders, and the animals destroyed in consequence. See Article "Ozena," page 238.

SWELLING OF THE SHEATH.

Horses are sometimes affected with swelling of the sheath. It is a condition of the parts which frequently arises from debility, and also as a result of the animal being confined for some time to the stable, either in consequence of sickness, or from the want of work. The most common cause, however, is uncleanness of the sheath.

TREATMENT.—Examine the organ, and if its interior be in a dirty condition, cleanse it thoroughly with warm water and soap. Should the affection arise from debility, or confinement of the horse to the stable from any other cause, cleanse out the sheath, and exercise the animal daily. Attend also to the diet of the horse.

For further particulars as to the diet of convalescent patients, see Section VI., page 108.

OVER-EXHAUSTION.

Exhaustion and over-excitement of the system, although (strictly speaking) cannot be considered as forms of disease, yet I shall treat upon them for two or three reasons:—First, because they are states of the organism which very frequently are the forerunners of the most destructive kinds of disease; secondly, because they are the most prolific sources of disease; and thirdly, because they have never been treated upon, and, in fact, scarcely recognised by veterinary writers as anything worthy of their attention, beyond a mere passing remark. A close observer, however, of equine disease will perceive their effects almost hourly. Cab and livery horses are exceedingly liable to suffer in consequence. They especially predispose the organism to both acute and typhoid forms of disease—such as Acute Inflammation of the Bowels, of the Feet, Kidneys and Heart, Lungs, and also of Typhoid Pneumonia. I have witnessed, on several occasions, attacks of Enteritis and of Laminitis, of a most frightfully severe character, arising from these causes. A veterinary surgeon having the care of horses belonging to an establishment where the work is of a most uncertain and irregular character, as in livery stables, should always be on the alert as to the existence and consequences of Exhaustion and over-excitement.

Symptoms of Over-Exhaustion.—Over-exhaustion of the system deranges, more or less, every function within the organism; so that, in noting its symptoms, we simply note what relates to a condition of general disturbance.

The temperature of the skin is deranged; the legs and feet may be of a feverish heat, while the hair upon other parts of the body may be penfeathered. The appetite will be fickle, or the animal may refuse every kind of food, and yet appear

anxious for it. Horses so affected seem as though they desired something entirely different from their ordinary kind of fare. The pulse may not be much excited, but it is peculiar; sometimes it is a little thready, or irregular, or intermittent. The animal will be shifty and uneasy; the respirations will be slightly hurried or irregular; and sometimes a faint, soft cough will be emitted.

The condition now described is one of great danger to the animal so affected, unless its existence be recognised, and measures of a conservative character taken to ward off its consequences; but if the animal be exposed to the effects of wet or cold, or made to perform a still greater amount of labour—or if the two causes act in association—disease of a severe character will most certainly supervene; and, in all probability, the animal will die.

Treatment.—The first great esssential towards recovery is *rest* to the animal; it is not only a primary essential, but it is an *absolute* one. The other essentials are—pure air, aud a warm, comfortable habitation; with suitable food, prepared in a suitable manner.

The best remedies, in general, are—Aconite, Aromatic Ammonia, Nux Vomica, Sesquichloride of Iron, Chlorate of Potass, and Hot Water.

Aconite may be given at the commencement of the treatment; it will tend to allay the feverish excitement of the system. Use it in 2-drachm doses of the 1st dilution, mixed with 6 or 8 ounces of water. A dose may be given every three or four hours, two or three times in succession.

Aromatic Ammonia.—Aromatic Ammonia is valuable when the hair is pricked and the animal is chilly. Give it in 6-drachm doses, mixed with 6 or 8 ounces of water. It may

be repeated once or twice, at intervals of three or four hours.

Nux Vomica.—Sesquichloride of Iron.—These remedies are to improve the appetite and the general tone of the system. They should not be resorted to until the morbid excitement has subsided, otherwise they will not be productive of good. Give the Nux in 2-drachm doses of the 1st dilution, mixed with 3 or 4 ounces of water; and the Iron in 2-drachm doses, mixed with 8 ounces of water. They may be given in alternation, morning, noon, and night, for four or five days in succession.

Chlorate of Potass.—This remedy will be found valuable to administer when the dung emits a disagreeable effluvium. It may either be given alone, or in alternation with Aromatic Ammonia, or Nux Vomica. If alone, give it in drachm doses, mixed with water, and repeated every six or eight hours; or if in alternation, every four hours, for two or three days in succession.

Hot Water.—Bathe the limbs with hot water. The process may be repeated night and morning, for two or three days in succession. The water may be used at a temperature of 112° or 114° Fahrenheit. Bandage the limbs immediately after fomenting them.

Diet.—The dieting of the animal, until fairly recovered, is a matter of importance. It should consist of bread and milk, boiled barley and bran, now and then a carrot or two (if in season), or a boiled turnip. For further particulars relating to diet, see page 108.

Section VIII.

WOUNDS AND INJURIES.

WOUNDS AND INJURIES.
CAUSES OF WOUNDS AND INJURIES.
SYMPATHETIC FEVER.
TREATMENT OF WOUNDS.
BROKEN KNEES.
CAPPED HOCK.
BRUISED HOCK.
OPEN JOINT.
FISTULOUS WITHERS.
TRAUMATIC OPTHALMIA.

PRELIMINARY REMARKS.

To fully treat upon Wounds and Injuries it would be necessary to describe a number of states and conditions both of a simple and complicated character; simple and complicated, inasmuch as they are of every kind, grade, and degree, from a slight swelling upon any part of the skin, caused perhaps by the stroke of a whip, to the fracture of a limb, or the penetration of the cavity of the chest by a large foreign body, such as a bar of iron or the pole of a coach.

In a treatise like the present I cannot enter into a minute description of every kind of wound and form of injury to which horses are subject, together with the treatment necessary to pursue in every individual case. I shall, therefore, only describe those wounds and injuries which are of the most common occurrence, together with those modes of treatment which I have found the best in effecting their cure.

CAUSES OF WOUNDS AND INJURIES.—Before entering upon a special account of each particular form of injury, a few remarks in relation to the causes which are productive of injury to the horse may prove of advantage to the reader.

Causes productive of disturbance to, and within the animal economy, such as are now implied, admit of being arranged into two orders—*mechanical* and *chemical.* The principal mechanical causes are kicks, blows, punctures, striking one limb against the other during the act of locomotion, falls, concussions, injuries from shoeing, and a hundred others of a similar character.

CHEMICAL CAUSES are of a very limited class; that is, so far as this class of causes are allowed to operate perniciously upon the horse. Occasionally a veterinary surgeon is called upon to afford assistance to one of the equine class, which by some means or other, seldom very clearly ascertained, may have fallen into a wet lime pit, or upon whose limbs a carboy of nitric or sulphuric acid may have been spilt. Beyond an occasional case of this nature, one rarely, however, hears of horses suffering violently from the operation of chemical causes of a direct character.

MECHANICAL CAUSES.—For the convenience of pointing out certain causes of injury of this class, it is proposed to have a more limited classification, or rather it is proposed to divide this class of causes into sub-classes; the object in doing so is, that I may the more efficiently point out defects which are not only numerous, but are the most fruitful source of accidents falling under the cognizance of the veterinary surgeon; and if by pursuing this course I am the means of inducing those who are the owners of, or the attendants upon, these animals, to

become more vigilant and circumspect, and thus not only prevent suffering, loss of labour, and even at times the life of a valuable animal, my task will have been performed to a good purpose. It is not possible at all times for the most careful of men to avoid every cause of accident; but it is more than probable that numbers of casualties which have happened might have been avoided, and others of daily occurrence may in like manner be prevented.

Horses used for the purpose of society, or which are intended for such purposes, are found in three states of existence, viz:—in the stable, at work, and at grass; so that mechanical causes of injury very naturally arrange themselves into three classes, viz:—*such as may happen to the animal within the stable; such as may happen to the animal when at work; and such as may happen to the animal while at pasture.*

Class I.—Or such as may happen within the Stable, comprises: 1st—horses getting loose in the stable, and fighting with each other; 2nd—slips upon the pavement of the stable; 3rd—injuries from the timber and iron work used in the construction and division of the stalls; 4th—injuries from the animal being cast in a stall or loose box; 5th—injuries from improperly fastening the head of the animal; 6th—injuries from the feet of the animal becoming fast in a loose urine grate, or any open space which may exist between the sets constituting the floor of the stalls; 7th—injuries from improperly constructed stall posts; 8th—injuries from hooks and nails in connection with the mangers and racks; 9th—injuries to the feet and tendons of the animal from forks and other tools used within the stable; 10th—injuries to the feet of the animal from shoeing; 11th—injuries inflicted upon the head, hips, ribs, shoulders, and other parts of the animal, from lowness of the stable, narrowness of the stalls, or from low and narrow doorways to stables.

I hold it as a rule, that accidents having once occurred, similar accidents, under similar circumstances, are liable to occur again. Of the causes above enumerated, let us examine a little more in detail; at the same time, I beg of the reader, if he be the owner of a horse, to go at once and thoroughly examine his own stable, with an eye to the prevention of consequences such as I shall presently treat upon. Accidents are sooner prevented than remedied, and "the eye of a master," it is said, "maketh diligent." Causes of injury arising from circumstances numbered 1st, 2nd, 3rd, 4th, 10th, and 11th, are the most common sources of injury to horses while within the stable.

1st.—*Becoming loose in the stable, and fighting with each other.*—This is generally done during the night. A horse by suddenly jerking his head, or from restlessness, pulls and stretches the head-collar shank, or what is more probable, what ought to be the shank; the fastening breaks, and the animal finds himself loose, when he at once begins to wander about the stable. This excites alarm amongst the other horses, and presently the row begins; and unless some one be at hand to restore order, the owner may consider himself a fortunate individual if no worse injuries are inflicted than a few cuts and bruises. Sometimes, however, they break the limbs of one another, or a jaw bone is broken, or a joint is laid open, and months elapse before the animal injured is again fit for service. Stablemen are often careless, and for weeks or months before the grand melée comes off every animal in the stable may have been tied to the manger in a most insecure manner, probably with old halters, or old neck straps without buckles, and with a piece of old hempen cord for a shank, half untwisted, and more than half rotten.

2nd.—*Slips on the Pavement of the Stable.*—The majority of stables are ill-constructed; few are rightly constructed in every essential. From the pavement being too steep, or greasy from the accumulation of dirt, horses slip, and sometimes severely injure themselves. Broken knees, and even fractures, occur from causes of this nature.

3rd.—*Injuries from the Timber and Iron Work used in the construction and division of the Stalls.*—The necessity for attending to causes of this nature will be exemplified the best by the short account of a case of injury which resulted in death, as a consequence of that carelessness so common in these matters. Without stating lengthy details, we may relate—that in order to strengthen a stall post a strong flat piece of iron, thin at the top, and eight or ten inches in length, was let into a large stone at the bottom end of the stall post. The iron was let into the stone at its lower end to the depth of about three inches. Down the flat surface of the iron a number of small holes were bored, through which were passed an equal number of screws into the wooden post immediately behind the iron; so far all very well. In course of time, however, the screws fell out, and the post dropt as before to one side, and left the iron standing alone. As usual, in such cases, the matter was not noticed, until one morning a servant man, on entering the stable, found one of the horses lying dead. Upon removing the horse the iron in question was found within its body. The animal, in lying down, had dropt upon the projecting iron, which had pierced the skin and muscles in the region of the flank, had torn open the large vein situate immediately contiguous to the spinal column, and the horse had bled to death, without again rising from the ground. It is perhaps needless to say that attention was given to the projecting metal after this, and that the stall post was made secure forthwith.

4th.—*Injuries from the animal being cast in the Stall or loose Box.*—It is seldom that horses are severely injured from being cast in the stall. It appears as though some horses had a fondness for this sort of thing; they will be found cast so frequently, and in places where it cannot be said to arise from want of room. If after removing the animal into another stall or box, having more room than the one it was taken out of, and the casting is repeated, it may be fairly set down as an item of vice, and perhaps the best mode of cure in such cases, is to try the effect of a whip upon the animal before righting him. I know that this remedy has succeeded in more instances of the kind than one. Injuries from causes numbered 5, 6, 7, 8, and 9, are of less frequent occurrence.

5th.—*Injuries from improperly fastening the head of the animal.*—Chains and ropes are the common articles by which horses are secured to the manger; and weights of lead, iron, or wood, are also common articles for suspending to the end of the tie.* Very frequently this is neglected, and the loose end is merely secured by tieing it to the ring at the front of the manger. If a shank so secured be very long, the horse when eating hay from the ground—a common habit with many horses—may easily have one of his limbs become entangled, and before the limb is liberated he may injure himself to a serious extent. The author once attended a case of this nature, where the flexor tendons of the near fore leg were exposed for more than three inches in length. The injury arose from the limb being entangled in a chain. Similar accidents may result

* To determine the proper length of the tie or the collar shank, observe the following rule:—bring the chin of the horse to the edge of the manger, pass the loose end of the tie through the ring at the bottom of the manger, and that part of the loose end which *lies upon the ground*, if any, is more of the tie than is required. All additional length of tie is dangerous. The clog at the end should be from two to three pounds in weight.

where the tie is too long and the weight too light. On other occasions the shank will become twisted tightly around the neck, and the poor animal will be found half strangled, and the head enormously swollen in consequence.

7th —*Injuries to the animal from improperly constructed stall posts.*—A stall post may be too low or too high. If too high the horse is liable to strike his head against it when stepping quickly round in the stall. When made too low, horses may kick themselves across the post. Accidents of this nature have occurred, enormous abdominal ruptures have been caused thereby, and death to the animal resulted. The proper height for a stall post is about five feet five or six inches.

Class II.—Causes of Injury to the Animal while at Work.—These are also a numerous class of causes. They may occur to the animal in the form of falls, and violent concussions; or they may arise from an exhibition of vice, such as kicking, or bolting in harness, and overturning the vehicle. Draught horses when heavily loaded, and travelling down hill, are liable to suffer injury from the breaking of the slipper chain or in consequence of neglect in not putting on the slipper; also from the gathering of nails within its feet; striking of the shoe of one limb against the opposite limb, arising either from a faulty conformation of the limbs, or from fatigue, or bad construction of the shoes, or all these causes acting in association. Also, from slips of the animal in winter during the prevalence of frost; also from ill fitting, and badly constructed harness and gears. The harness or gears may be too large, or too small, or too heavy. These and many other causes of a like nature occur so frequently, and are moreover of so palpable a nature that further remark upon them is unnecessary.

CLASS III.—INJURIES ARISING TO ANIMALS WHILE AT GRASS.—In treating upon this class of injuries, the reader should understand that we allude not only to adult animals, but to young animals unbroken. The majority of injuries which occur to horses whiles at grass, arise from kicking, galloping, and leaping. They kick each other at times in a most savage manner. In galloping they frequently sprain themselves, or are severely injured from falls or violent concussions. In leaping walls and hedges they are frequently bruised and staked. They are also liable to suffer from injuries inflicted purposely by malicious people. It is bad practice to turn horses to grass where a footpath crosses the pasturage, particularly if near a large town, or contiguous to the banks of a river. Vagabonds are always wandering about such localities accompanied with vicious dogs, under pretence of ratting. Now and then these wretches take it into their heads to pitch at a mark with stones, and on some occasions, instead of hitting the mark, they hit the eye of some poor animal. Accidents, from causes of this nature, are sadly too common, as many who own young stock know to their cost. Turning young horses and horned cattle together into the same pasture is not a practice to be approved of. Sometimes a young horse will delight in racing and tormenting young cattle, and this sort of game frequently ends by the latter becoming goaded to desperation, when a battle ensues, in which the former not unfrequently receives its death-blow; or the horn of the beast inflicts an extensive flesh wound; or the cavity of the chest is entered; or the abdomen is penetrated, and the bowels protrude. We could relate many accidents of this nature, some of them of a very singular character.

The parts of the animal most frequently injured from the operation of causes such as we have enumerated, are—the thighs, the hocks (both upon their outer and inner surfaces),

the patella joints, the ischium, and the fleshy region immediately contiguous thereto; also the knees, the breast, and the feet. We have attended upon scores of cases of this nature and by far the greater number were injured in one or more of the parts named. When a veterinary surgeon receives an order to attend upon a case of injury, he should go prepared to combat consequences of the worst character. The most formidable injuries are—fractures of one or more of the bones; penetration of the cavities of the chest or the abdomen, by large bodies—such as the pole of a coach or the end of a gig-shaft, attended with injury to the large blood-vessels, or protrusion of the bowels, and division or laceration of one or more of the larger arteries or veins. The next in importance are open joints; after which we may rank flesh-wounds, such as are extensively torn, lacerated, jagged, or contused. For the former class of injuries, bandages, splints of wood, and gutta percha, may be required. For the second class, collodion and cotton wool; and for the latter, perhaps a few carpet-pins, a portion of soft string, Tincture of Calendula, and Tincture of Arnica. The consequences to be anticipated (or which may prove inevitable results of the severer forms of injury), are—hemorrhage, so profuse as to destroy the life of the animal unless discovered and arrested; limited, but permanent, rupture of the bowels; permanent lameness; traumatic fever, or traumatic tetanus.

WOUNDS AND INJURIES.

Wounds and Injuries comprise a number of conditions of an abnormal character—such as Flesh Wounds, Broken Knees, Open Joints, and Fractures of the Bones. It is proper also to describe wounds with reference to the region of the body in which they may exist; as, for example—abdominal wounds,

wounds of the neck, wounds of the ischium, and so forth. They are also described with reference to their direction—viz., whether they be transverse, circular, oblique, or perpendicular. Of Flesh Wounds there are five varieties, viz.:—

1st. Incised Wounds.
2nd. Lacerated Wounds.
3rd. Jagged Wounds.
4th. Punctured Wounds.
5th. Contused Wounds.

An Incised Wound is a wound where the skin and sub-tissues are clean cut.

Lacerated and Jagged Wounds are those where the skin and sub-tissues are torn and jagged.

Punctured Wounds are wounds inflicted by small but sharp-pointed instruments, such as a nail or an iron spindle.

Contused Wounds are injuries inflicted upon the skin and sub-tissues, without any perceptible breach or division of the skin.

Healing of Wounds.—In order that what I write respecting the treatment of wounds may be perfectly understood, and its rationality fully recognised, it is necessary that I explain, to some extent, the nature and course of the healing process. Many erroneous notions prevail with regard to the treatment of wounds. Authors have written, and continue to write, as though the natural powers of the living animal were incapable of repairing wounds and injuries. We are alike taught by veterinary authors and the generality of veterinary teachers, that medicated fomentations, stimulating oils, liniments, decoctions, and astringent washes of almost every variety, and even at times the application of red-hot iron, are all necessary to cure a wound, or keep down exuberant granulations, or what is commonly called "proud flesh."

The healing process is described as consisting of stages—viz.: "union by the *first* and *second* intentions;" the "first intention" consisting of adhesion of the divided surfaces by means of a glutinous fluid called lymph, the parts being in fact united to one another by a species of glueing; while the "second intention," the granulating or suppurating process, consists in the fleshy chasm being filled up by the gradual deposition of fleshy grain-like particles, superimposed one upon another. In the healing of wounds, the chief care of the practitioner should be directed to the attainment of union by the *first intention*. The suppurating process is one not to be desired; and, in the majority of instances where it occurs, it will be found to arise more from the maltreatment of the wound than from any natural tendency of the tissues, when injured, to manifest such a change. We are told that union by the first intention is very rarely to be accomplished, especially with large-sized wounds, or with such as are jagged, torn, or lacerated.

The healing process may be briefly described as follows: * A wound of the flesh, when first inflicted, is generally succeeded by more or less bleeding, which, if not interfered with, or a large blood-vessel is not divided, and the animal is allowed to remain at rest, will shortly stop. Blood is effused, and a clot is formed upon the exposed surfaces, which speedily plugs the open mouths of the bleeding vessels. This is the first process. The second is, the drying of the blood-clot, and tumefaction not only of the parts injured, but of the parts contiguous thereto. About the third day, and in some cases even as early as the second day after the accident, the dried

* It must be distinctly understood that we are here treating upon flesh-wounds left entirely alone, where the constitutional energies are vigorous, and where the patient is not put to labour.

blood will crack, and at the bottom of the cracks lymph will appear. The cracks of the blood-clot and the appearance of lymph are constantly associated phenomena, but the two may be hastened or retarded by the weather. When the weather is hot—as in the months of June, July, and August—wounds will speedily present a moist appearance. If the weather be cold and frosty, wounds will present a dry appearance for some time, and the formation of lymph be consequently delayed; so dry, in fact, will a flesh-wound frequently become in cold weather, and continue so for days, that any one not acquainted with the cause might conclude that the injured tissues were taking on a permanent leathery state. About the fourth day, all circumstances being favourable, the cracks will in the generality of cases become wider, and the lymph more abundant and more dense. The formation of lymph may now be said to have become established; and its secretion will go on until the fleshy chasm and all its irregularities become filled to a level with the skin. Finally, the lymph will harden and dry, and the wound will become what in surgical language is termed cicatrized. When the lymph-secreting process is fairly established, the swelling and tumefaction will rapidly disappear; until, long before the healing process is complete, the tissues immediately contiguous to the wound will have become as free from swelling as though not involved with the wounded tissues. Such are the processes by which the vital powers repair a wound, or a breach of continuity in the flesh; they are simple, and thoroughly effectual.

Treatment of Wounds.—In directing our consideration to the treatment of wounds, several important matters require the care of the practitioner: first, attention to the injury; and secondly, attention to the system of the animal injured. A

small injury, unimportant to all appearance, will sometimes produce systemic effects of a very severe nature—such as a violent condition of inflammatory fever, or a violent form of Tetanus; these are common consequences.

When called in to treat a wound, the veterinary surgeon should take cognizance of its condition. By this I mean, he should note whether it be a small, large, lacerated, contused, or a punctured wound. Is it deep or superficial? Does it bleed profusely? Is it associated with fracture of one or more of the bones? To what depth does it extend, and in what direction does it run? Is there within it any foreign body—such as a piece of stone, a splinter of wood, particles of sand, or a piece of broken glass? All these and many more are matters to determine, and are comprised in what we term the condition of the injury.

Should the hemorrhage be copious, the bleeding vessel should at once be got at, and made secure by tying a strong ligature of silk around it. The colour of the blood, and the manner in which it issues forth, will be sufficient to determine the character of the vessel injured. If the blood be of a bright scarlet colour, and if it issues in partially interrupted jets, the vessel injured will be an artery; while the size of the current will afford some indication of its calibre. In searching for a blood-vessel, a large, soft sponge is necessary to dab upon the part where the bleeding vessel may be.

Having secured the bleeding vessel, the next duty is to remove any extraneous substance which may be present. Foreign bodies may be taken away with the common forceps: but to remove sand and small grit, the best instrument is a powerful syringe—similar to the one shown at Fig. 16, p. 157—which fill with tepid water, and send the contents forcibly upon any part where the grit may lodge, the object being to wash it

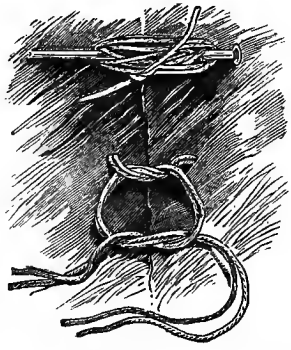
away by the force of the current. The practioner should next clip away all fragments of loose tissue, whether it be skin, muscle, or tendon. These fragments cannot unite again; therefore remove them, and save nature the trouble by a process far more tedious and uncertain.

We have now arrived at that stage of the business where almost every one who professes to understand the matter would exclaim, "Now stitch up the wound." Whether this should be done, however, will depend upon circumstances. Sutures are advantageous in some cases, and not in others. The general error with regard to sutures is in supposing their application necessary to every wound of the incised, torn, or lacerated varieties. We propose, therefore, to discuss the matter, and determine, so far as experience will permit, not only the proper cases in which to use them, but also the proper kind of suture best adapted for flesh-wounds.

The cleaner a wound is cut, the more perfect the cure; providing the wound be rationally treated. Sutures to such wounds are proper; but where wounds are much jagged and torn, the skin torn, or the muscular substance broken up or ploughed deeply into—or where foreign substances are lodged within the part injured, and cannot be entirely removed, it is better not to insert sutures, but to cut away the loose bits of skin and flesh, to remove all the dirt which it is possible to remove, and give the wound the most finished appearance possible under the circumstances. On the other hand, in wounds which are large and deep, and where pieces of skin and flesh hang loose, and away from the surface-line of the injured parts sutures will be found of good service: they will effectually fix the loose parts, and give *a proper direction* to the action of the healing powers.

SUTURES.—The best Sutures for securing a wound are those which receive the names of the *Twisted* and the *Interrupted* Sutures.

Fig. 24.



Twisted Suture and Interrupted Suture.

The Twisted Suture is made by passing a strong pin through each side of the wound, and then drawing the borders closely and securely together by means of a short length of small, coarsely-twisted hempen string, which is afterwards made secure around the pin, as shown in the annexed engraving. The point of the pin is then removed, and one suture is complete. This form of suture is the best for wounds not immediately contiguous to any of the joints. In having recourse to it, the operator should take firm hold of the skin, and afterwards tie the pin firmly within its substance.

The Interrupted Suture is made in a similar manner to the twisted suture, only it is accomplished with a needle and silk, instead of a pin and a short length of hempen string. A glance at the annexed engraving will sufficiently explain the nature of the operation. The needle should be broad and curved, and the silk should be strong, and used of double thickness. This form of stitch answers well when it can be made to hold properly; but sometimes the secretion from the wound destroys the silk, and sometimes the stretch which is exerted upon it by the skin and sub-tissues is so great as to cause the silk to cut its way out of the skin; the wound, in either case, is opened afresh, and the cure is rendered more tedious in consequence.

The proper kind of needle best adapted for making the interrupted suture, is shown in the annexed engraving.

Fig. 25.

Needle for Interrupted Suture.

Rules to Observe when Inserting Sutures.—Unless great care is exercised in placing the injured parts straight, and afterwards keeping them so, unsightly blemishes are certain to remain. These rules may be thus stated :—

I.—Before sutures are inserted look well to the wound, with regard to its size, form, and direction. The most common form of wound is that of a triangle.

II.—In fixing sutures, place them so as to secure the divided parts as exact to each other as possible. The best way to do this is to commence by securing the wound at its most conspicuous parts, by which means accuracy of adjustment throughout will be more readily effected. If the injury, for example, be of a triangular form, it is best for the operator to commence with his sutures at the highest point of the triangle; by this mode the sides of the wound are placed straight against each other.

III.—The distance at which sutures will be fixed apart from each other will depend upon circumstances. One inch, however, may be set down as the average distance.

IV.—In fixing sutures, avoid forcing the skin into folds or corrugations. The wounded parts *will be found to grow together in the way they are set.* In like manner, where

sutures are not used, the skin should be attended to in this respect; otherwise the part, when healed, will present an ugly blemish. To the want of care, in this respect, may in general be attributed the ugly blemishes which remain after the healing of wounds. It is seldom the skin requires to be forced from its adhesions more than once to prevent consequences of this nature.

V.—Whatever kind of suture is resorted to, the operator should secure firm hold of the skin, and make the sutures no tighter than what suffices to hold the divided edges properly in contact.

VI.—The lowest part of a wound should be left more open than any other, to allow free exit to any serous exudation which may collect. Such exudation not unfrequently carries away particles of dirt, or other foreign bodies of a minute kind.

VII.—When sutures are properly fixed, let them remain until the wound is thoroughly healed. It has been taught that sutures excite unnecessary inflammation, and that, in consequence, they should be removed as speedily as circumstances will permit; this is an error. On the contrary, they excite little or no inflammation. Sutures, unless loose, and frequently disturbed, are all but inert.

A few remarks on the state of the wound before sutures are inserted, and we close this part of our subject. Before sutures are inserted, the injured vessels should have ceased to bleed; or the operator should be certain that a clot of blood is not enclosed within the surface of the injury. A clot of blood, so enclosed, will act as a foreign body and produce

inflammation, and necessitate the removal of the sutures. It is better, therefore, to wait until the hemorrhage ceases, and until the exposed surfaces put on a glazed appearance; when the operator, having previously removed all foreign bodies and loose shreds of tissue, is, with a soft sponge, to gently remove what blood may be deposited at the bottom of the wound, and proceed, without delay, to insert the sutures of the kind necessity may require, and according to the directions already given. Having secured the wound with sutures, other duties present themselves for consideration—such as dressings to the injury; the use of bandages, fomentations, poultices, and (in certain cases) the mechanical support afforded by the use of a high-heeled shoe.

Dressing of Wounds.—Tincture of Calendula is one of the best remedies which can be used as an outward application to flesh-wounds of every kind. Use it as a lotion, mixed as follows:—

Tincture of Calendula	...	...	1 ounce.
Soft Water ...	...	...	1 pint.

Tincture of Arnica is the proper remedy to be used to injured tendons and the fibrous structures generally, whether such injury be of the nature of sprain, cut, or bruise. Use it as a lotion, mixed as follows:—

Tincture of Arnica ...	...	...	1 ounce.
Soft Water ...	...	...	1 pint.

Calendula lotion is allowed the first rank as an outward applicant to flesh-wounds. Arnica lotion is considered the best for external use to wounds of the tendinous and fibrous tissues. Lotion, if applied to either class of wounds, will produce a quicker result, if used warm. This may be easily effected by keeping the bottle containing it upon the hob, a short distance from the fire. In this situation it will keep warm, and

be ready for immediate use. Two drachm doses of Arnica 1, in 2 ounces of water, should also be given to the patient two or three times a day, as an internal remedy, unless Traumatic Fever of a severe character should necessitate other treatment of a nature to be fully described hereafter.

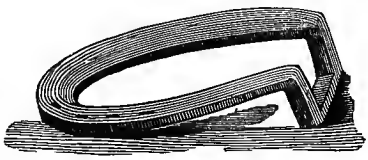
Bandages.—Bandages, in numerous cases of wound, will be found excellent auxiliaries to a successful issue. The best kind for the purpose are linen; a linen fabric is cooler than woollen. Bandages for wounds should be from four to five inches wide, and of a length suitable to the circumstances of the case. They are procurable from every saddler, of a kind purposely made for stable use. Home-made bandages are objectionable, unless the borders are secured. Raw edges, as housewives call them, are a nuisance: the loose threads become entangled amongst the sutures, where sutures are used; or they become insinuated into the sore, and thus excite unnecessary irritation. Bandages will be found of value to incised wounds inflicted upon the lower part of a limb. Their application will prevent undue swelling of the limb; but at the same time they have the disadvantage, particularly to wounds not sutured, of causing them to remain raw longer than if left alone. The advantages, however, must be placed against the disadvantages, and the balance decided accordingly. When applied to a wounded limb, bandages should always be put on wet; the hair should be wet also. Wet bandages keep their position better than dry ones; they should be put on with caution, the operator taking care to make them secure. To bandage a limb properly requires practice. The bandage should fit easy; it should also press equally upon every part to which it may be applied, and so arranged that ordinary motion of the limb, so long as the patient remains in a stable or loose box, will be unable to work it loose.

Fomentations.—Fomentations are highly valuable in promoting the cure of wounds: they relax the tension of the swollen tissues; and by so doing promote a greater freedom of circulation within the wounded structures, and a more rapid exudation of lymph. In fomenting a wound care is necessary, otherwise more harm than good may be done by the operation. It is not desirable, when fomenting a wound, to wash away what nature produces to heal it. Hot water should be applied, not so much *upon* the wound as immediately around where the injury may be situate. For further particulars and directions relating to this matter, see pages 155 and 157.

Poultices.—As I have treated upon everything of practical importance relating to Poultices, at pages 149 to 152, to avoid repetition, the reader is directed to turn to that portion of the present treatise.

High-Heeled Shoe.—In certain forms of injury to the extremities (during the time the animal is at rest in the stall or loose box), it is necessary to relax, as much as possible, the natural tension of the structures injured. This may be effected by raising the heel of the injured limb; and the best way to do it is by the use of a shoe, similar to the one shown in the annexed engraving. Injuries upon the point, and posterior parts of the hock-joint, require thus relaxing; also the structures situate at the back of the hind limbs, between the hock-joint and the root of the tail; also in cases of injury upon the flexor tendons both of the fore and hind-limbs; and also when

Fig. 26.



High-Heeled Shoe.

injury is inflicted upon the muscles at the back of a fore limb above the knee, or immediately behind the knee-joint. The caulkens of the shoe represented, are made high; and, reaching from one caulken to the other, for the latter to rest upon, is a stout bar of iron. The purpose of the cross-bar is to allow a more uniform pressure to the foot when upon the ground, and also to prevent the shoe from being entangled amid the straw: if the patient be turned to grass, it will also prevent the heel from sinking deep into soft ground. The caulkens should be made not only of extra length, but should project backwards; when so constructed, the foot is not thrown up so suddenly, nor pitched so much upon the toe. The length of the support, including the cross-bar, should be from one to two inches. Of course the length of the support need not be so great if the caulkens are not inclined backwards. See *Fig.* 26, as it is a matter of some importance.

Loose Box.—The wounded patient should be placed in a comfortable loose box; and if the weather be cold, the animal should be well clothed; but if the weather be warm, the clothing may be dispensed with. Especial care should be directed to the doors and windows of the box, to shut out the flies. The windows should be guarded with gauze, or thin canvass blinds. Flies, in hot weather, are a dreadful pest to a wounded horse. For further directions with regard to loose boxes, see page 117.

Exercise.—Exercise may, in the milder cases of injury, be resorted to, particularly if the patient has not the liberty of a loose box. It is a matter, however, of no great importance to give directions upon. The condition of the patient, including the extent of the wound, the state of the weather, and other matters of a trifling character, of which the owner of or

attendant upon the animal will be fully competent to judge upon, should determine how far exercise may be resorted to.

Treatment of Punctured Wounds.—This variety of wound, as I have previously stated, is the most dangerous of all others. They are so, says Druitt in his valuable work on surgery,—

"1st.—Because from their depth they are liable to implicate blood-vessels, nerves, viscera, and other deep-seated parts of importance.

"2nd.—Because the parts which they traverse are stretched and torn,and consequently are disposed to inflame and suppurate.

"3rd.—Because matter when formed has no free exit, and is liable to burrow extensively.

"4th.—Because foreign bodies may be carried into great depths without being suspected, and create long continued irritation.

"5th.—Because they are most liable to be followed by Tetanus."

The locality in which the puncture may occur, will, to a considerable extent, determine the course to be pursued. Should the puncture be inflicted within a fleshy part, pass a small director, if possible, to the bottom of the wound, and then with a straight probe-pointed bistoury cut it freely open. Make it, in fact, an open wound. The danger will thereby become lessened to some extent, and the whole will be exposed to view. After the wound is laid open, carefully remove either with the forceps or the large syringe any foreign matter which may be observed; after which leave it alone for some time; then apply a few twisted sutures, and treat the wound according to the rules already laid down. Dress with the Calendula lotion give Arnica internally, and keep the animal upon a cooling diet.

The puncture, however, may be inflicted within structures which, to lay freely open would be likely in the end to destroy the patient. It may occur, for example, within a joint, or amongst the tendons of a limb. It is clear in cases of this nature, such a proceeding as laying the wound freely open is altogether inadmissible. The course under these circumstances is, if possible, to carefully inspect the instrument which inflicted the puncture, and from its appearance judge as to the depth it may have penetrated, and whether it has left any foreign matter within the injury, such as rust of iron or splinters of wood.

In treating a punctured flexor tendon, we must, if possible, prevent suppuration of the injured tissues. The burrowing of purulent matter amongst the tendons is at all times a serious affair, and to prevent it recourse must be had to many expedients. In the first place, after having determined the extent of the puncture, place upon the foot a high-heeled shoe, apply a lotion of Arnica freely to the surface of the part injured, then keep the limb well secured with cold water bandages, and immediately over the seat of the injury, both upon the inner and outer side of the tendons, place a small roll of wet linen, each roll about three or four inches in length, and about the thickness of the thumb. These rolls must be placed within the folds of the bandage, and pressed with moderate firmness to the limb; the object being, by pressure and cold, to limit the inflammatory action which may ensue. If suppuration has set in before medical aid was sought, the pus should be liberated, when the course of treatment will still be very similar. Should matter have gravitated to the fetlock, it must of course be evacuated; but the operator had better proceed with caution, lest he should make an incission into the cavity of the joint. To avoid doing this force the skin to one side when making the incision, so that the external opening will not correspoed to the one passing

through the sub-tissues. After the matter is evacuted, recourse should be had to bandages and to the linen rolls; only, in this case, the rolls will require to be larger than those described above, or more numerous; and they must be carefully applied in a direction parallel to the length of the tendons. In this manner we have succeeded on many occasions, in bad punctures of this nature, in restoring the parts to health without the least blemish being in the end perceptible.

We recommend the use of linen rolls. At times, however, there use is prejudical. This is the case now and then with horses of an excitable nature. The best substitute in such cases is a wet sponge; it is, in fact, the best upon every occasion of the kind, but it is expensive; so that where rolls of linen or wash leather will answer the purpose, the expense of sponge is saved. Sponge of a proper form can be selected, or clippings can be made of lengths suitable to the requirements of the practitioner. The advantages of wet sponge-rolls, are their softness and elasticity.

Above all things, in these cases, avoid blisters and the application of hot stimulating oils. By the aid of a high-heeled shoe, such as shown at Fig. 26, page 470; with Arnica 1, in 2-drachm doses, administered to the patient; Arnica lotion externally; also cold water bandages, linen rolls, or wet sponge; together with a cooling diet; is a course of treatment which if steadily persevered in, will effect all that is desirable

Treatment of Contused Wounds.—A Contused Wound I have elsewhere defined to be a bruise without break or division of the skin. Its contents usually consist either of serum wholly, or clots of blood and serum, both of which should be removed, and the wound afterwards treated as an ordinary incised wound. Sometimes these cases prove obstinate. The sac may be opened

and its contents liberated, but it will refill many times in succession. The best plan to pursue, is not to open the sac at once (that is, if the practitioner be called in to a case of the kind soon after the accident), but to foment the injury several times a day, for several days in succession, until the diseased action has had time to exhaust itself, when the swelling may be freely opened, and its contents evacuated. After the part is opened, should the situation of the cavity permit, pressure may be applied; it will hasten the cure by preventing a further effusion of serum. But if pressure cannot be applied, and the sac refills if left alone, enlarge the opening previously made, inject Arnica freely within, and leave a tent of tow in the orifice for twelve or fourteen hours, at the end of which time the lips of the opening will be found swollen, and purulent matter will issue therefrom. All which then remains to be done will be to encourage for a time such purulent discharge until a new action is thoroughly established; then remove the tent from the orifice, and dress daily with warm Arnica or warm Calendula lotion, of the strength described at page 468.

Systemic Disturbance Caused by Wounds.—We have now to consider the principal phenomena of a constitutional nature which occasionally become manifest as a sequence to wounds and injuries of every variety, and of almost every degree of severity, save those of the most trivial character. To early recognise and successfully combat two forms of systemic disturbance of the traumatic class will require every care, and at times the highest skill, on the part of the veterinary surgeon. The first is Traumatic Fever; the second, Traumatic Tetanus.

Traumatic Fever may terminate in Traumatic Tetanus; or Traumatic Tetanus may supervene without any perceptible intervention of Traumatic Fever, or the two may be associated.

In wounds of a severe character, from the second to the fifth day after the infliction of the injury, the system begins to manifest sympathy towards the part injured. This manifestation of sympathy, when presenting symptoms of a kind presently to be described, is denominated Sympathetic Fever, Acute Inflammatory Fever, Traumatic Fever, and other names which I need not enumerate. It is a state which is generally spoken of in terms of alarm, as though it was something greatly to be dreaded, and requiring the practitioner to apply measures of the most urgent nature for its dispersal, otherwise the results are regarded as certain to be fatal. Now, we unhesitatingly assert, that such alarm in the generality of cases is entirely groundless. Traumatic Fever is easy to control, save in those cases where vitally important viscera—such as the lungs, the abdominal organs, or the brain, are extensively injured. The period when cicatrization occurs in wounds of the ischium, or in broken knees, is far more to be dreaded than the inflammatory fever which supervenes upon the occurrence of a wound in the general run of cases. One important fact must be borne in mind, viz.—that Traumatic Fever is to be regarded as an inevitable consequence in wounds and injuries of a severe character; and that, being inevitable, instead of attempting in extreme cases to ward it off, or seeking to suddenly check it when developed, we ought rather to carefully watch its progress, and endeavour, if possible, to keep it within bounds, until its cause becomes so far modified as to allow of the subsidence of the fever. Indeed, this is all we can hope to accomplish; for as one of our eminent writers upon surgery observes, when speaking of a similar state in the human being: "it cannot be cut short, although its undue violence may be abated."

Symptoms.—The animal, from the occurrence of the accident to the commencement of Acute Fever, may not have

thoroughly rallied from the shock; so that the veterinary surgeon ought to be fully alive to what may follow, and by judicious treatment from the first, endeavour to do that which will modify its effects accordingly. Usually about the third day the pulse of the patient will manifest disturbance of the system. It will increase in the number of its beats, reaching on some occasions as high as 75, 80, 85, or 90 per minute. The respiratory process will also be found to participate. The respirations may become from 30 to 45 per minute, and be of a short and superficial character. The skin at one time will be hot, and the breath hot, at another time the skin will manifest chilliness and the hair become elevated; the urine will be scanty and high-coloured, and the bowels what is called constipated. In addition to this, the patient will be exceedingly restless, and if the injury be amongst the muscles of a limb, the limb will be frequently shifted. The injured parts will also become exceedingly tender, swollen, angry looking, hot, and in some cases, dry in appearance, and in others moist from the exudation of a watery secretion. In this state the patient may continue two or three days, at the end of which time, should the case progress favourably, the surface of the wound will present a less tender and angry appearance. The pulse will have become softer, and the skin of a more genial temperature. In short, the state of the animal will be found to gradually improve as the exudation of lymph becomes more abundant; until finally the swelling will disperse, and the animal will become thoroughly restored.

Treatment.—The indications presented are twofold: first, to control the violence of the fever; and secondly, to aid to the utmost the natural powers to exude lymph. In promoting the latter we at the same time are relieving the former.

The best remedies in general are—Aloes, Aromatic Ammonia, Nux Vomica, Rhus Toxicodendron, Aconite, and Fomentations.

Aloes.—Where the condition of the patient is high, or where the system is in a gross state, a purgative will prove highly beneficial; but if the animal be feeble, or suffering from excessive loss of blood, a purgative is to be avoided.

The best purgative is Barbadoes Aloes, the dose of which will depend upon the size and breed of the patient; 6 drachms by weight, however, will suffice for a large sized horse. Aloes is best given in the form of a ball.

Aromatic Spirit of Ammonia is indicated in cases where the pulse is feeble and easily compressed, and where the vital powers are depressed. Sometimes it proves of essential service if given to the animal while under the excitement arising from the injury. Horses of a very exciteable nature will on some occasions, after receiving an injury, tremble severely and breathe rapidly for hours afterwards. A diffusible stimulant given to the patient upon such occasions will be found of value. From 4 to 6 drachms of the remedy may be given for a dose in a pint of cold water. The Ammonia may either be given alone or in alternation with Arnica, in 2-drachm doses of the 1st dilution.

Nux Vomica.—Should the administration of a purgative be deemed necessary, Nux Vomica is a remedy to resort to after the action of the purgative has subsided. It will assist in keeping the bowels in a well-regulated condition. Give the remedy in 2-drachm doses of the 1st dilution, mixed with 5 or 6 ounces of water: repeat it every eight or ten hours.

Rhus Toxicodendron.—This is a valuable remedy to apply, either as a lotion or to give internally. Used as a lotion, it is good for wounds and injuries of the tendons and ligamentous structures. Mix it as follows, and apply the lotion warm to the wound:—

Rhus Toxicodendron	..	..		1 ounce.
Water (soft)	...	...	...	1 pint.

If resorted to for internal use, it may either be given alone or in alternation with Nux, or Aconite, or Arnica. Give it in 2-drachm doses of the 1st dilution, mixed with a little water.

Aconite.—Aconite will frequently be found an excellent remedy to apply externally, especially when the patient is severely pained. Make a lotion of it as follows:—

Aconite	..	..	...	1 ounce.
Water	..	...	...	½ pint.

Mix the two together, and apply the lotion warm.

Fomentations.—Of Fomentations I have already treated: for every particular with respect to their use, temperature of the water, and so forth, see page 155 and 156.

BROKEN KNEES.

Broken Knees is a common form of injury. Sometimes the parts are injured so slightly as to be merely grazed; in other cases the joint is so injured as to render it an act of humanity to destroy the animal forthwith. Injuries, however, of so severe a character are not common; more frequently the skin of the knee-joint is divided, and the sub-tissues are more or less torn and lacerated.

The accident of falling and bruising the knees is more common in hot than during the cold months of the year. The heat of the weather, the constant battering of the feet upon heated, unyielding roads, together with the exhaustion experienced by horses which are over ridden or driven during the summer season, are causes which sufficiently account for the result in question.

The most formidable injury of the knee is—where the joint is opened and the bones are exposed. A reference to the diagram (upon the following page,) of the structures of the

knee, together with the description appended to it, will enable the reader to more fully comprehend the nature, relative importance, and position of the tissues which are generally injured.

The annexed engraving is, to some extent, a diagram of the superficial structures which enter into the formation of the fore-leg of the horse. The reader is to suppose the limb to be stripped of its skin.

Fig. 27.

a b c, The extensor metacarpi muscle, a muscle which arises at the bottom part of the shoulder, and passes down the front of the leg, as shown in the engraving. It terminates in a strong, flat tendon, which is inserted into the top part of the cannon-bone *f*, immediately underneath and in front of the knee: this muscle is represented divided between the letters *a* and *b*. Situated directly behind the extensor metacarpi muscle is the synovial membrane *k*, which is also represented divided, for the purpose of showing the cavity of the knee-joint. *j j* Is a thick fibrous structure, situate immediately behind the skin. This membrane, from its position, will naturally afford a strong covering and protection to the extensor muscles; it is represented as rolled a little to one side. *g*, the extensor metacarpi oblique muscle (extensor oblique muscle), a muscle which crosses the extensor metacarpi, and is inserted into the

bone and fascia above the knee; its use is to hold down the extensor metacarpi, and to aid that muscle in extending the limb. Surrounding the tendon *a b* (extensor metacarpi muscle), is the sheath of the tendon, the inner surface of which (the surface facing the tendon) secretes the necessary amount of synovial fluid to lubricate the tendon. Of this synovial sheath I shall have more to state presently.

To complete the present description, I may mention that a mass of fat is always situated between the back surface of the tendon of the muscle *a b*, and the front of the synovial membrane *k*, the uses of which are important. It aids in the prevention of friction between the tendon *a b* and the membrane *k*; and also, in consequence of its acting as a pad to the tendon, it will be a slight fulcrum to it, and give it a greater directness of action when called into play.

Now the structures most liable to injury, when a horse falls with violence to the ground, are the skin, its sub-tissues, and the tendon of the extensor metacarpi muscle (muscle *a b c*). It will be evident to the reader who reflects upon this matter, that before the cavity of the knee (or, in other words, the *joint* of the knee) can be exposed, the following structures must be completely divided: 1st—The skin, which is always of great thickness in front of the knee. 2nd—The fibrous tissue *j j*, which is immediately behind the skin. 3rd—The synovial sheath of the tendon of the extensor metacarpi. 4th—The tendon of the extensor metacarpi muscle. 5th—The fatty substance behind the tendon; and 6th—The synovial membrane of the knee joiut proper.

The reader is not to understand, from the above, that the knee joint proper never is exposed, because the contrary is the fact; but I am of opinion that the exposure of the joint is far less common than is generally believed.

Examination of the Patient.—The first thing which a veterinary surgeon should do, when called to a case of Broken Knees, is to examine the feet of the animal. Is there a stone embedded between the inner side of the frog and the inner rim of the shoe? Or has a nail penetrated the frog, or the sole of the foot? Or does the shoe fit the foot improperly, and lame the animal in consequence? Is the patient affected with corns? These, and similar matters, are to be determined forthwith.

I was lately called to a case of Broken Knees, and I found, in the right fore-foot of the patient, a small piece of slate firmly wedged between the outer side of the frog and the sole of the foot: it had been there several days, during which time the animal had suffered severely from its presence. In every case, then, of Broken Knees, remove the shoes and carefully examine the feet.

The next thing to do is to determine the condition of the wound. Is the joint opened, and are the bones exposed? Or is the tendon of the extensor metacarpi muscle laid bare? In either case a discharge of synovia will be present. To ascertain precisely the extent of the injury, lift the foot from the ground, and flex the knee to its utmost extent,—when, if the joint is opened, the bones will be brought fairly into view; and the chances of recovery may be calculated accordingly.

Washing the Knees.—Having examined the knees, and satisfied himself of the extent of the injuries, the third requisite for the veterinary surgeon to do is to cleanse the wounds thoroughly. This he can best perform with water, and the aid of a large syringe similar to the one shown by *Fig.* 16, p. 157. Fill the instrument with water repeatedly, and send its contents each time, with force, upon the torn and lacerated structures; after which, clip away all the ragged and thready

bits of tissue and projecting portions of skin which may hang from the surface, and the operation of cleansing is complete.

TREATMENT.—The simpler forms of Broken Knee, and the treatment necessary to the same, I will first describe; after which I will fully treat upon what is proper to do when the joint is exposed.

The best remedies, in general, are—Cold Water Bandages, Arnica, Rhus Toxicodendron, Sulphate of Copper, and Aromatic Ammonia.

Cold Water Bandages.—In every case of Broken Knee, from a graze of the skin to the laceration or division of the tendon of the extensor metacarpi, commence the treatment with Arnica Lotion and Cold Water Bandages, and continue their use for several days in succession. The bandages should be removed and re-moistened with water every three or four hours during the day, and the Arnica lotion applied as frequently. The lotion should be made as directed at page 468.

At the end of the time stated (or before, or after, as necessity may require) remove the bandages, and allow the patient to stand six or eight hours, without either the bandages or the lotion being applied—during which time inspect the knees carefully, and see if synovia escapes, where it escapes, and to what extent.

To stop the escape of synovia the efforts of the veterinary surgeon should be directed; and one of the best substances for this purpose is the Sulphate of Copper, which prepare and use as follows:—Take of the Sulphate 4 drachms, which triturate in a clean wedgewood mortar, so as to reduce its particles to an *impalpable* powder* Wipe the wound as dry as possible

* Be particular with respect to the fineness of the powder, otherwise the Copper will do more harm than good.

with a clean soft linen cloth; and upon the part where the synovia escapes, dust a portion of the above powder every hour for twelve or fourteen hours in succession—during which time, in order to insure the stillness of the patient, secure its head to the rack. I have directed the powder to be applied every hour, for twelve or fourteen hours; but it may be necessary to continue its use, as directed, for three or four days in succession, ere the flow of synovia is completely arrested. Sometimes, however, the desired effect is produced in a much shorter time. Should the synovial flow be arrested, and the knee present other proofs of a favourable character—that is, if the structures do not swell inordinately, and the patient moves the limb freely and feeds well—all that the attendant can do is to leave the injury alone. Time is necessary to allow the vital force to restore the injured tissues to a condition as complete as possible under the circumstances.

Sometimes, when the discharge of synovia is stopped, and the wound is all but completely healed, the knee will swell considerably. This generally arises from the patient being taken to work before the limb is sufficiently recovered. When this is the case, the animal should at once be taken from work, and Arnica lotion and cold water bandages should be applied regularly, until the swelling and the temperature of the limb are reduced, and the parts more efficiently restored.

Treatment of Open Knee Joint.—Having ascertained that the joint of the knee is exposed, and having also removed *all* the dirt which may have lodged in the broken tissues, the great object is to keep the limb straight until the natural powers have so far restored the injured tissues as to effectually close up the breach. Now this cannot be done if the limb is not so secured as to prevent the joint from being bent. The

bending of the knee, if allowed before the broken tissues are repaired, will aid materially in preventing a proper cure: the consequence of the bending will be—supposing the case to terminate in the most favourable manner possible under the circumstances—the healing process will proceed more slowly; synovia will firmly clot within the joint, and when clotted will act as a foreign body, and irritate both the synovial membrane of the joint and the cartilages of the bones; new growth of substance will gradually extend over the external opening of the wound, and close up the coagulated synovia; the structures of the knee, in consequence, will take on a slow form of inflammation; and in the end the joint will become stiff, and the patient ever after rendered useless except for slow work, or (if a mare) for breeding purposes.

To prevent these consequences, secure the limb as follows; Bandage the limb from above the knee down to the fetlock joint. Between the bandage and the hair, and on each side, place lint in close contact with the outer and inner sides of the limb, and close up to the knee fix two pieces of sponge (one piece to each side) of moderate thickness, and about four inches in length; then take a wood splint—seventeen or eighteen inches in length, 3-16ths of an inch in thickness, from three to four inches wide—convex upon one side, and concave upon the other; and within two inches of each end holes should be cut through the splint (one hole at each end) 3-8ths of an inch wide and one inch in length, the long way of the openings to be parallel with the long direction of the splint. Through the openings of the splint pass two straps, having buckles attached to them; then place the concave side of the splint against the back of the knee—the middle of the splint to be a little below the knee joint; pack soft wet sponges between the back of the knee and the splint, so as to cause the latter to fit close and

secure, and in order to do this, it will be necessary to place sponges both above and below the joint; then, while an assistant holds the splint evenly to its place, bandage it firmly to the limb—leaving, as before, the wound exposed; after which, buckle the straps, and the operation is complete.

In the course of a few hours, sympathetic fever will generally set in, the severity of which will depend upon circumstances—such as the extent of the injury, the susceptibility of the patient, and the treatment which afterwards may be pursued. So soon, however, as the animal becomes restless, commence bathing the limb with cold water; then it is that the value of the sponges will become evident—the object being, by constantly wetting them with cold water, to maintain the knee at a cool temperature, and thus keep down the fever so far as it may be caused by inflammation arising from the wound. The mere bandaging, however, of the limb, and maintaining it in a rigid, straight position, for days together, will produce considerable fever to nervous and excitable horses.

Cold water may be applied to the sponges occasionally, by pouring it between the bandages and the limb; or if it would be better to have it flowing upon the sponges uninterruptedly, for two or three hours in succession, adopt the following simple arrangement:—Procure a large tin vessel, having a strong moveable handle; at the bottom part of the vessel solder a small tube, with a tap attached; fill this vessel with cold water, and hang it up at the side of the stall, higher from the ground than the head of the patient. Procure also three or four yards of india rubber tubing, of a quarter of an inch diameter, one end of which slip over the pipe soldered to the bottom of the tin vessel, while into the lower end insert a few inches of copper or tin piping; tie it and the india-rubber tube (the copper pipe within the india-rubber tube) securely together; after which,

pass this end behind the bandages, and turn the tap so as to allow the water to flow upon the sponges; the stream of water down the flexible tube can be regulated by the tap situate at the bottom of the vessel. It is not desirable to have a strong current, as it would wet the limb and the floor of the stall too much, and empty the tin vessel too rapidly. By having two or three taps soldered into the tin vessel, and as many india-rubber tubes attached, it is clear that small currents of water can be directed to any part of the knee joint, and the currents kept flowing so long as the tin vessel is supplied with water. In this manner the inflammation within the joint may in numerous cases be effectually controlled.

The best remedies for internal use, and the general principles relating to the treatment of Sympathetic Fever, I have already detailed and treated upon at pages 477 to 479.

The treatment of the wound, or of the structures directly injured, will in one sense be a simple affair. The principal difficulty will be to arrest the flow of synovia; and perhaps the best mode of doing this will be by a free use of the solution of Nitrate of Silver, and also of the Sulphate of Copper, in the way described at page 484. Note carefully the place where the fluid escapes; dab the part with the Nitrate of Silver, and then dust the powder frequently upon it.

The limb should be kept rigidly straight, if possible, until the opening into the cavity of the knee is closed with new tissue; and, in order to do this, relieve the animal when he is thoroughly wearied, by placing him in slings.*

* Upon the whole, I think very little of slings; but circumstances may arise when the veterinary surgeon may be compelled to resort to them. It appears to me that machinery might be constructed to secure the patient, then to raise him from the ground, and gradually lower the animal upon his side, and there allow him to remain as long as necessary.

DIET.—The diet of the animal should be entirely of a soft character. If in season, give grass or green clover; or, if the accident occurs during the winter season, allow boiled turnips, carrots, and mashes of bran and linseed. For further instructions relating to diet, see Section VI., page 108.

OPEN JOINT.

Before treating upon Open Joint in its particular forms, I will direct the attention of the reader to one or two matters of practical importance in relation to it.

First, with regard to the term Open Joint, I wish the reader to understand that I mean by it any opening made into the sheaths and bursæ of tendons, as well as into a joint proper. Both forms of injury are of a very similar character, and they are to a great extent productive of results of a similar nature.

The chances of recovery to a joint when opened will depend upon the following conditions, viz.—the size of the opening; the extent of the injury which may be inflicted upon the synovial membrane; the time which may have elapsed from the infliction of the injury to proper treatment being commenced; the kind of joint which may be penetrated; and the treatment previously pursued.

Openings made into the following joints and structures will be more readily cured by placing a high-heeled shoe upon the foot of the affected limb,* viz.—injuries of the bursæ and the fibrous sheaths situated at the back of the knee; the flexor tendons of both the fore and the hind limbs; the fetlock joints; injuries to the tendons situate within the hollow of the heels; the structures contiguous to the hock, the stifle, and the elbow joints.

The treatment of Open Joint should be as simple as possible. Unless the joint can be made rigid and secure without the

* For proper form of shoe to use, See *Fig.* 26, page 470

infliction of pain, the limb should be left entirely free, and other measures of a different character resorted to.

Some animals when severely injured, are fully conscious of the necessity of being quiet. When tired of standing they will lean against the wood work of the stall, and slide down upon the straw as gently as possible; and when necessity requires they will rise again as quietly. Let those having the care of such animals look carefully to the shank of the head collar, and see that it is of extra strength; and also that the ring in the manger through which the shank passes be firmly secured to the bottom of the manger. The shank, when firmly tied, will aid the animal materially to rise from the ground; indeed, without it, the act would be difficult to perform.

When a joint is opened, or its structures are injured, first wash the wound thoroughly, but avoid washing and fomenting it for many hours afterwards. When the joint is kept constantly wet, it is impossible to tell whether synovia escapes or not. Hundreds of horses affected as described have been crippled for months, in consequence of doctoring and fomenting the limb when a joint was open.

Treatment.—The best remedies in general for closing wounds of this character, are—Sulphate of Copper, Nitrate of Silver, Lime, and Collodion.

Sulphate of Copper.—Nitrate of Silver and Lime.—Sulphate of Copper and Nitrate of Silver will sometimes permanently arrest the flow of synovia by coagulating it at the mouth of the opening; and when a plug is obtained, and it firmly adheres to the injury, the opening will gradually heal and no further harm ensue; but it is seldom that matters will proceed so favourably—the pressure of the synovial current (especially if the patient be uneasy) will force the plug from

the wound time after time. The best way to apply the Nitrate of Silver is in solution. Tie a small piece of sponge to the end of a stick, which dip into the solution and dab upon the opening as the synovia flows out. The best mode to apply the Sulphate of Copper is in powder, which prepare and use as follows:—take half an ounce of the salt, powder it in a wedgewood mortar to an *impalpable powder*, then add 2 ounces of flour and mix them well together, and dust a portion of the powder upon the opening every fifteen or twenty minutes until a firm crust or scab is formed upon the opening; should this fail to have the desired effect, recourse should be had to the Lime.

Lime.—The Lime for this purpose should be burnt, slaked, and powdered; a small portion of which should be frequently placed upon the opening, the object being to form a solid crust upon the injury. I have on numerous occasions succeeded in arresting the flow of synovia by this means when every method previously tried had failed.

Collodion.—This is a valuable agent to apply when the opening is recent; it is seldom, however, it will check the discharge from an opening which has been a week or more in existence. Cotton wool should be dipped into the Collodion, the wound should be wiped perfectly dry, and the Collodion plaster placed firmly upon it; after which, a number of plasters of a similar kind should be placed on and around the first one, so as to effectually close it in every direction.

CAPPED HOCK.

Capped Hock generally originates from a bruise, either in consequence of the animal kicking against a hard substance, such as a board or a stall post, or from lying with the hock in close contact with the bare floor.

The point of the hock in these cases swells considerably, and in the more acute and severe forms of the injury the animal is lame. Sometimes a Capped Hock proves a very troublesome affair, especially when the structures are severely injured and the animal is wrongly treated. People who rub stimulating mixtures, hot oils, and irritating compounds upon the swelling, will in all probability, aggravate the case beyond all hope of perfect restoration.

TREATMENT.—If the case be acute, that is, if the hock be much swollen, hot, and painful, and the patient lame, put a high-heeled shoe upon the foot of the limb affected, and apply Arnica lotion and hay bandages dipped in cold water to the joint. In order to prevent the rough hay chafing the skin of the hock, first fold a wet woollen bandage around the part, and then place the wet hay bandage over it. The bandages may be kept wet by pouring lotion and cold water upon them. The treatment here recommended should be regularly continued for five or six days in succession, and the patient during the same time should be dieted upon soft food.

In two or three weeks after the infliction of the injury, should the point of the hock remain enlarged, and its temperature become natural, the enlargement may be rubbed with the ointment of the Biniodide of Mercury, in the following proportion:—

Biniodide of Mercury	half a drachm.
Lard	1 ounce.

A portion of the above to be rubbed daily upon the swollen part until the skin becomes sore, when the use of the ointment should be given over and a little oil or lard used regularly instead, until the soreness is gone, when the ointment may be again applied until the soreness is again produced; in this man-

ner the enlargement upon the point of the hock should be treated until it entirely disappears. The dispersion of the soreness will be much facilitated by exercising the horse occasionally.

During the treatment care should be taken to prevent the hock from being again injured. The animal should be well supplied with straw.

FISTULOUS WITHERS.—BRUISED BACK.

A fistulous condition of the withers, and a bruise or crush upon the back, are injuries caused in almost every instance by the saddle.

The tissues of the withers when bruised or injured inflame; the common symptoms of which are, swelling of the parts, accompanied with increased heat and great tenderness. As the disease proceeds, the swelling increases until at last matter is formed, which ulcerates through the skin and is discharged; and thus a condition of the structures is established, which may continue for an indefinite period, unless prevented by proper treatment.

Treatment.—The treatment of Fistulous Withers should be of a very direct and simple character. Arnica lotion and cold water cloths are the proper remedies to commence with, unless matter should exist within the structures injured at the time the animal is brought to a veterinary surgeon for treatment, or if the structures be in that state that the formation of matter is inevitable, then warm lotions and hot fomentations are the best to adopt until purulent matter is formed, when the abscess should be opened and its contents evacuated. The abscess should be cut open to the very bottom. Unless every sinus in connection with the abscess is freely exposed, the purulent matter within will gravitate in many directions, and the

disease, in consequence, will daily involve a greater extent of living tissue. The proper thing to do, then, is to lay open the fistulous sinuses to the very bottom, and afterwards dress the parts daily with warm Arnica or Calendula lotion, made as directed at page 468.

Bruised Back.—With regard to the treatment of this form of injury I shall be brief. If taken at the onset—rest, cold lotions, and cold water cloths, will be the only treatment necessary. The position of the parts, when injured, is the principal hindrance to the healing of the back. Prevention is better than cure. Examine carefully the saddle, and see that it fits the animal comfortably in every way.

TRAUMATIC OPTHALMIA.

Inflammation of the eye, arising from a blow, or in consequence of a scratch upon the organ, or from a particle of straw or a seed of hay falling within the eyelids, is a matter of occasional occurrence.

Symptoms.—The eyelids are swollen and closed; tears are secreted by the lachrymal gland in abundance; the surface of the eye is dim, its mucous membrane is congested, and the patient manifests an intolerance of the light.

Treatment.—Examine carefully within the eyelids for foreign bodies such as bits of straw, or an inverted eyelash, or a seed of hay. So long as foreign bodies are retained within the eyelids, the inflammation arising from their presence will continue; and all medical and surgical aid applied to relieve the disease, unless the cause be removed, will not prove of the least service.

The best remedies in general are—Cold Water, Aconite or Arnica Lotions, Belladonna, and Aloes.

Cold Water.—Arnica and Aconite Lotions.—The application of Cold Water to the eye will be valuable when the organ is inflamed from causes of a traumatic nature. The best mode of applying it is by means of a sponge. Procure a soft, large-sized, cup-shaped sponge, which fix to the eye by means of a linen cloth (the hollow surface of the sponge towards the eyelids); having done this, it is easy to keep the sponge wet either with Cold Water, or Arnica or Aconite Lotion, made of the following proportions, viz.—3 drachms of Tincture of Arnica, or 2 drachms of Tincture of Aconite to 1 pint of Cold Water.

Belladonna.—Belladonna may either be given alone or in alternation with Arnica. When used alternately, administer it in 2 drachm doses of the 1st dilution. The Arnica may also be given in similar quantities. Alternate these remedies morning, noon, and night, so long as necessary.

Aloes.—If the patient be in high condition, or the system in a gross state, a gentle purgative may prove of value to the animal. Give a ball daily, containing 1 or 2 drachms of Aloes, until the bowels are gently acted upon.

DIET.—The diet of the patient should be soft—such as bran, boiled corn, grass, or carrots. See Section VI., page 108.

Section IX.—LAMENESS.

SPRAIN OF THE FLEXOR TENDONS.	PRICKS FROM SHOEING.
SPAVIN.	SAND CRACK.
NAVICULAR DISEASE.	THRUSH.
RING BONE.	SPLINT.
CURB.	SIDE BONE.
BOG SPAVIN.	SHOULDER SPRAIN.
WIND GALLS.	QUITTOR.
THOROUGH PINS.	CORNS.
	CANKER.

PRELIMINARY REMARKS.

It is impossible, in a small treatise like this, to give the reader an adequate account of every form of lameness which, from time to time, is known to affect the horse; to do so would require a volume equal in size at least to the present. I shall, therefore, only treat upon some of its principal and most common forms.

Lameness, as Mr. Percival truly observes, "is but a symptom of disease—not of itself disease." Its causes are innumerable; the majority of them, however, or what may be termed its exciting causes, are mechanical. The predisposing causes of lameness are vital and hereditary. "The diseases and accidents, of which lameness is commonly a symptom, are inflammation and ulceration of the joints, inflammation and ossification of the periosteal and catilago-ligamentous tissues,

sprain, and inflammation of the ligaments and tendons, laceration and inflammation of the muscular fibre, disease of the structures peculiar to the foot, faults or accidents in shoeing, contusions, wounds of all sorts, tumours, ulcerations, fractures, dislocations, spasm, and paralysis. A catalogue sufficient to show that the causes of lameness," as remarked above, are innumerable, "and equally various in kind as in degree—some being altogether as simple in their character as others are complex and obscure."* Without a knowledge of the anatomy and physiology of the locomotive apparatus of the horse, and of the normal conditions of every tissue, the aggregate of which constitutes the limbs—without an extensive experience of the operation of the various causes enumerated, and of their almost innumerable modes of acting and operating, an accurate diagnosis of the precise nature and seat of lameness in all cases, is simply impossible.

The parts most prone to injury, and of the animal to become lame in consequence, are the feet, the tendons, and the hock joints.

Many of the joints, comparatively speaking, are but rarely affected with disease; the elbow of the fore limb,—the hip, and the navicular joints of the hind limbs are of this character.

The fore feet are far more prone to be affected with disease, and the animal to be lame in consequence, than the hind feet.

Spavin, Navicular Disease, and that condition of bone disease of the knee joint which is very liable to terminate in anchylosis of the knee, are all of a character closely similar to each other.

In every case of lameness, especially when symptomatic of disease of a fore limb, before a practitioner pronounces a decisive

* Percival's Hippopathology, Vol. IV., Part 1, Page 8.

opinion upon the nature of the case, he should carefully examine the foot of the affected limb. Errors of a grave and very damaging character have arisen in consequence of practitioners not attending to this simple, and what ought to be an undeviating, rule of practice.

SPRAIN OF THE FLEXOR TENDONS.

Sprain of the flexor tendons is a common cause of lameness, and one which, if not recognized and properly treated at the commencement, is very liable to terminate in disease and lameness of an incurable character.

The flexor tendons are liable to be sprained at every part of their tissues, or from their origin at the back of the knees and the hocks, down to where they terminate at the back of the feet; and, so far as I have hitherto observed, the tendons of the hind limbs are just as liable to sprain and injury as those of the fore limbs.

One of the most common forms in which these structures are injured, is that of sprain of the metacarpal ligament (*b*, *Fig.* 28). A reference to the engraving on the following page will enable the reader to clearly comprehend the matter.

The symptoms of Sprain, or injury of the metacarpal ligament, are generally of a very direct character. The animal steps lame; he treads upon the toe; the structures behind the limb affected are swollen, tender upon pressure, and of a higher temperature than ordinary. If the disease is not perceived at its onset, which is very frequently the case, and the animal is continued at work, the ligament becomes greatly thickened; the limb becomes shortened; it also projects or shoots over at the fetlock joint, and the animal is rendered thereby incapable of rapid locomotion.

In other cases a sprain occurs at the top of the fetlock, or at the locality indicated by the letter *e;* or it may occur to any part of the tendons proper between *a* and *e*. The symptoms in every case, however—whether the sprain occurs in one part of the tendons or another, are of a very similar character—viz.: stepping upon the toe; heat, swelling, and tenderness of the tissues injured, and slight improvement in the gait of the animal with exercise.

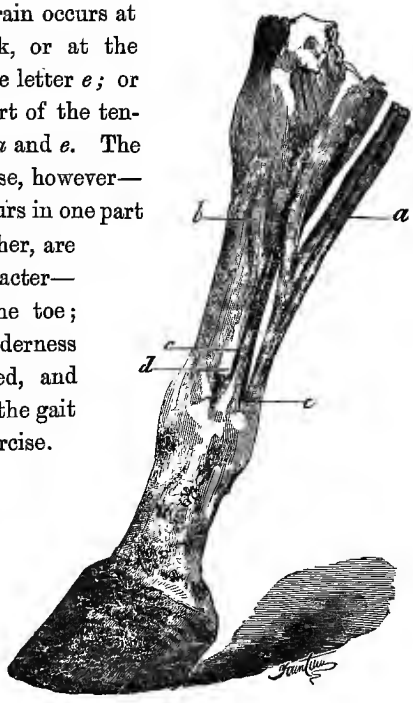


Fig. 28.

a The flexor Tendons are partly drawn away from the limb, to more clearly show the metacarpal ligament *b*. The uses of this ligament are to support and give strength to the flexor tendons. It arises in the fore limbs, just under the knee, and terminates as shown above.

c The suspensory ligament; it is this ligament which is ruptured when the horse (what is called) "breaks down."

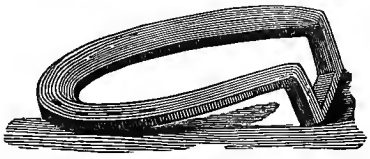
e The top of the fetlock joint—a part which is extremely liable to be sprained.

TREATMENT:—The best remedies and modes of treatment in general, are—Arnica, Aconite, Cold Water Bandages, a High Heeled Shoe, Blisters, and Firing.

HIGH HEELED SHOE.—As soon as the injury is discovered, place a high heeled shoe upon the foot of the affected limb. The shoe alone will be more than half the cure. It

will prevent the structures being stretched, or exerted when the patient moves about. I have great difficulty, in cases of sprain, in convincing people of the necessity and importance of a high heeled shoe. I am continually told that a shoe of this kind, if fixed upon the foot of a lame limb, will cause the limb to grow shorter. The objection is a ridiculous one. The proper form of shoe is represented in the annexed engraving: and the proper way it should be made is described at page 470. If the patient be a draught horse, the animal should not be worked in the shafts for some time after recovery, and the heel of the shoe should be lowered gradually.

Fig. 29.



Arnica Lotion.—Aconite Lotion.—Cold Water Bandages.—Arnica lotion should be applied to the limb several times a day; and, during the acute stage of the injury, give the patient Arnica in 2-drachm doses of the first dilution. The dose may be repeated two or three times a day.

After bathing the limb with Arnica lotion, it should be encased in a cold water bandage. A wet hay-band is the cheapest, and will retain water the longest.

Sometimes in cases of this kind when Arnica fails to afford relief, Aconite lotion proves of signal service. Use it in the following proportions:—

Aconite	4 drachms.
Water	1 pint.

Apply the lotion warm, several times a day, and afterwards encase the limb in a woollen bandage, saturated with hot water.

Firing and Blistering.—In severe cases, or when the injury has been neglected, it will in all probability be necessary to fire and blister the patient; these measures, however, should not be resorted to at the onset. The animal should be treated for two or three weeks prior to these operations being performed, as directed in page 499; then fire and blister the limb, and place the animal in a roomy, comfortable box, and there allow him to remain for two or three months afterwards.

For every particular relating to Firing and Blistering, and the treatment of the animal after being operated upon, see remarks contained in pages 161 to 176.

SPAVIN.

Spavin, Navicular Disease, Ring Bone, and Sprain of the metacarpal ligament, are perhaps the worst forms of disease and lameness arising therefrom, which can possibly attack the locomotive apparatus of the horse.

Spavin is well known to be a disease which affects the hock. Its predisposing causes are bad formation of the limbs; these are hereditary causes. The exciting causes are sprain of the joint, and injuries arising from violent concussion to the small bones of the hock.

As Spavin is a disease of common occurrence, and one the pathology of which is far from being generally understood, I will endeavour to place before the reader such leading facts, in relation to it, as will enable him at least to comprehend its principal features.

Without entering into elaborate details respecting the anatomy and physiology of the hock, I may state that its uses are twofold: first, it facilitates the motion of the limb; and secondly, it resists concussion. A reference to the engraving (page 502), which represents the inner surface of the joint (a

view which is partly accurate and partly diagramatic), will afford the rationale to these facts.

Locomotion of the animal upon macadamized roads, or upon any part of the surface of the earth, cannot be without concussion—to resist the effects of which, the limbs are evidently constructed upon the most perfect principles. Observe the Skeleton of the animal—and more especially for our purpose, the arrangement of the bones of the hind limbs. These bones, when occupying their proper position, form with one another four great angles, which angles will be more or less acute according to the natural position of the bones in the living horse, both when the animal is at rest, and also during the act of locomotion.

The first angle (beginging at the foot) is formed between the bones of the foot, the pastern, and the cannon-bone *a;* the second, between the cannon-bone *a* and the tibia *h*—the joint of the hock, in this instance, uniting the two mediately; the third angle is formed between the tibia *h* and the femur; and the fourth between the head of the femur and the pelvis, certain lateral processes of which hold the spinal column securely in its natural position.

The angles at which these bones are placed, with regard to one another, will to a certain extent constitute a safeguard against those shocks and concussions which the animal will experience when moving over the surface of the ground. A second safeguard will be in the great number of soft tissues which enter into the formation of the entire limb; while a third exists in the number of the bones of the hock, and in the manner in which they are placed or secured one upon the other. In spite of these beautiful and complex arrangements, however, experience proves that the hock is extremely liable to suffer from sprains and concussions, and that a very common result,

in consequence, is the production of that well known disease, Spavin.

If the joints of the hind limbs are examined, and carefully compared with one another, it will be seen that the greatest extent and freedom of motion (of any of these joints) will occur in the hocks; and also that the motion in the latter will be principally affected between the tibia *h* and the astragalus *g;* while the small bones *d e f c b*, situate below the astragalus, will act during the locomotion of the animal, as a series of buffers. Now it is amongst these bones, *d e f c b* upon the inside of the joint, that the disease in question—viz., Spavin—is always located.

Sometimes it commences between the under surface of the cuneiform parvum (the bone *f*) and the head of the inner splint bone *b;* in which case the Spavin is called, by dealers and horsemen in general, "a Jack." In other cases, again, the disease commences higher in the joint, or between the under surface of the cuneiform magnum *d e*, and the

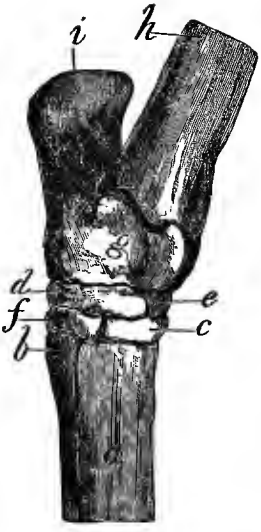


Fig. 30.

A representation of the hock joint, partly diagramatic, showing the arrangement of the bones of the organ.

a The cannon bone.

b The inner splint bone.

c The cuneiform medium.

f The cuneiform parvum.

d e The cuneiform magnum.

g The Astragalus, or pulley-like bone.

h The tibia. The motion of the joint is effected between these two bones *g* and *h*. The lower end of the bone *h* fits closely to the bone *g*, which is provided with deep grooves, into which the lower extremity of the bone *h* is securely fixed.

i The os clacis, or the bone which forms the back prominence of the hock.

upper surfaces of the cuneiform parvum *f* and the cuneiform medium *c*. This form of the malady is designated "High Spavin," in contradistinction to the other. It is a worse condition of the disease than the former. The animal is more acutely lame: the chances of cure are more remote: and it is far more likely to involve the other bones and articulations of the joint.

SYMPTOMS.—Having briefly described the seat, and also explained to some extent the mode in which certain causes operate in the production of Spavin, I will now detail the symptoms of the disease.

The symptoms during the early stages of the malady vary; in some cases the enlargement of the hock precedes lameness; and in others lameness precedes the enlargement; and sometimes large bony protuberances of the hock upon the seat of the spavin are met with without lameness as a result thereof having ever existed. Cases of this kind, however, comparatively speaking, are not common. The joint affected will be of a higher temperature than ordinary. At first the animal will move the limb stiffly; but the stiffness will disappear as the joint is brought more into play. As the disease progresses the animal will become decidedly lame, and the lameness more confirmed, and of a character more pathognomonic of the structures diseased. The hock will increase in size; the patient, if made to travel, will step upon the toe and upon the outside quarter of the foot; he will avoid flexing the hock; the limb, during the act of locomotion, will sometimes be carried outwards and forwards, and sometimes inwards and forwards; and the toe, to some extent, will be trailed upon the ground.

TREATMENT.—The best remedies and modes of treatment in general are—a high-heeled shoe, Firing and Blistering the hock, and allowing the patient a long rest in a loose box.

High-Heeled Shoe.—The proper form of shoe best to use in cases of Spavin is shewn at Figure 29, page 499.

Firing and Blistering the Hock.—Before having recourse to the actual cautery, the joint should be made as cool and the disease palliated as much as possible by means of cold water, or cold lotions. The best article to apply to the joint to effect this, is a hay-band folded around the limb and kept wet with cold water. Its use should be persevered with for six or eight days, or longer if necessary; when the hock should be Fired, and afterwards Blistered.

Rest.—Hundreds of Spavined horses are ruined either in consequence of the disease being allowed to go on until the bones of the joint become ulcerated upon their articulatory surfaces, or because sufficient rest is not allowed to the patient after the free use of the cautery.

The cure of Spavin depends upon two essentials: first, upon the small bones of the hock being anchylosed; and secondly, when the anchylosis is complete, upon the further deposit of bone being arrested. So long as motion can be produced amongst the cuneiform bones, and so long as bony matter continues to be deposited after the cuneiform bones are perfectly united, lameness will exist.

The free use of the cautery to the joint, aided by rest to the limb, will in the generality of cases do all which can be done in fulfilling these ends. It may be necessary to fire the hock more than either once or twice; and it sometimes proves of great value to vary the mode of cauterising the joint. Instead of burning the skin in lines (the usual practice in these cases) use a blunt-pointed budding iron, and cauterise the joint by burning holes into the enlargement. The holes should be about three quarters of an inch apart; and I am of opinion it is better to cauterise upon the middle of the bones than within the grooves or furrows which separate them. See Figure 30.

The patient should rest three or four months at the very least after being fired, and the high-heeled shoe should remain upon the foot during the whole period.

NAVICULAR DISEASE.

Navicular Disease, or, as Mr. Percival designates it, "Naviculartbritis," is another of those maladies giving rise to lameness which but too frequently prove incurable.

The ravages of this disease, for the most part, are confined to the navicular joints of the fore feet. The corresponding structures of the hind feet, however, are not as stated by Percival and others, entirely exempt from the malady.

The disease is hereditary in some breeds of horses. Its attack in many cases is sudden; while in others it is insidious; and in the generality of cases it is slow in its progress.

The first individual who discovered this disease, or at any rate, who first made the discovery known, and benefited the public thereby, was Mr. James Turner, veterinary surgeon, late of Croydon; before whose time people invariably referred the cause of this form of lameness to disease of the shoulder, an error which is yet very frequently committed by individuals who undertake the treatment of equine diseases, who are ignorant of every true principle relating to the practice of veterinary medicine.

The most conspicuous organ which nature has provided (I may almost say) for the especial protection of the navicular joint, is the frog of the foot; this organ acts as a buffer to the articulation. The removal of the frog, or any part thereof, will of necessity expose the joint more or less to every jar and concussion arising from the action of the feet upon the ground. I am of opinion that the predisposition of the fore feet to take on Navicular Disease is greatly increased in consequence of the

pernicious practice, which the majority of farriers pursue, of cutting large slices of horn from the crust and the frog of the foot at the time the animal is shod. Many practices are pursued with the horse which are destructive alike to his health and general economy; but few are more so than the atrocious one of cutting away the hoof and the frog; and until gentlemen who own horses better understand what pertains to their welfare in shoeing, and rigidly enforce the rule of *non-interference* with the drawing knife on the part of the farrier, I feel assured that the practice in question will never be remedied.*

Navicular Disease may exist in association with Side Bone, or Ring Bone; or all these diseases may exist in the same animal, at the same time.

Symptoms.—Lameness, arising from disease or injury of the navicular joint, is sometimes (as stated above) manifested suddenly, while in other cases it appears insidiously; under every condition of its development, however, when inflammation is established within the joint, no matter how slight the inflammation may be, the foot affected is certain to be warmer at the heel than natural; the increased warmth may be so slight that its existence may be doubted by many; but warmer it will be, and of this any one possessed of a delicate touch may convince himself by a careful comparison of the temperature of the two feet, that is, when one foot alone is affected.

The animal, when stood at rest, will place the diseased foot in advance of the other; the appearance of the limb, when in motion, will also be peculiar; the patient will step, even when slightly attacked with the malady, as though the foot was clubbed; the animal will avoid stepping boldly upon the heel; he will travel with freedom up hill, but in coming down again the gait will be short and paddling.

* For further remarks upon the practice in question, see pages 88 to 92.

Should the owner of the horse suspect the nature of the disease before passing its incipient stage, and place the animal without further delay under proper treatment, the malady, in all probability, will be arrested, and perhaps it may not again return. It is seldom, however, that a cure is effected so readily; on the contrary, one attack is but too frequently the forerunner of a second, and a second of a third, until the animal finally becomes incurably lame.

When both fore feet are affected the peculiarities of the disease will be more marked; the action will be short and paddling; the animal will tread upon the toes; and, if previously a high stepper, the action *will become low and tripping*. As the disease progresses, or passes into its more confirmed stages, the form of the feet will change, the heels will contract, and the crust at the quarters will become deeper and stronger than when the feet were healthy.

CAUSES.—The causes are twofold, viz.—predisposing and exciting. Of the former kind I may class hereditary tendency, and this is greatly favoured by the excessive cutting and rasping which the feet undergo when under the operation of the farrier. The exciting causes are sprains of the joint, concussion, and over-exertion of the fore limbs.

TREATMENT.—The best remedies and modes of treatment in general are—Cold Bandages to the limbs, Bleeding the feet, Blistering within the hollow of the heels, allowing the animal to stand in wet clay, shoes fixed to the fore feet slightly elevated by means of a bar across the heels, and Neurotomy.

All these remedies and modes of treatment have been long known and resorted to (many others could be added to the list) for years, but when the malady becomes thoroughly

established, or in other words, if the inflammation within the joint goes on to ulceration the disease is incurable; and the best course to adopt is to put the animal to slow work upon a farm.

SPLINT.

A Splint is a small bony protuberance, the ordinary site of which is upon and between the cannon and the splint bones of the extremities.

Splint is a frequent cause of lameness; its appearance is generally sudden; but at times, in consequence of the smallness of the protuberance, inexperienced or careless observers are very likely to overlook its existence. It is stated that large sized Splints never cause lameness, but this is not correct.

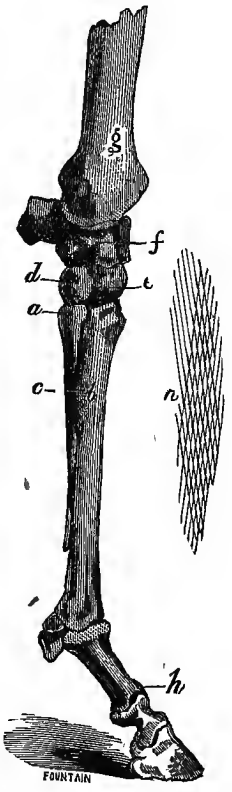
Horses having straight shoulders and upright pasterns are far more predisposed to manifest Splints than horses whose pasterns and shoulders are oblique.

Splints are the most common to the fore extremities, and they usually appear upon the inner sides of the limbs. The hind limbs, however, are not exempt from the disease; but in the latter case Splints are generally situated upon the outer side of the metacarpal bones.

The nature of Splint, its position upon the metacarpal bones, and the relation which it holds to the functions of the limb, will be more clearly and fully explained to the reader by reference to the annexed engraving. *Fig.* 31 is a representation of the bones of the fore limb of a horse viewed as they appear upon their inner side; *g* the radius or the bone of the arm, this bone is only partly shown; *f* the scaphoid; *e* the magnum; *d* trapezoid; *a* small metacarpal or inner splint bone; *b* the large metacarpal or the cannon bone. The bones *f*, *e*, *d*, are three which enter into the formation of the knee joint. Now a Splint

is a bony protuberance which is generally situated in the groove existing between the small metacarpal bone *a* and the cannon bone *b*. The artist has endeavoured to shew an enlargement of this nature at *c*. The situation of a Splint, however, varies considerably. Sometimes one presents itself near to the lower extremity of the splint bone; at other times in the middle of the bone; and at other times close to the joint of the knee; and sometimes upon the inner surface of the bones. When present in the latter position, a Splint can only be discovered by holding up the limb and pushing the tendons aside. Splints, when situate near to the superior extremity of the bone *a*, are far more liable to cause lameness than if situate upon the same bone at *c*, and when situate behind the tendons the danger from the size of the Splint is, that the action of the tendons may be interrupted.

Fig. 31.



Treatment.—The most speedy and effectual mode of dealing with a Splint is to cast the animal; then make a small opening through the skin, immediately below the enlargement, and with a small curved but narrow-bladed knife, passed into the opening and under the skin, the splint is to be cut down upon and completely divided. The patient may then be allowed to rise, and the limb kept cool for a few days, by means of a cold water bandage.

Blistering.—Sometimes a Blister will speedily disperse a Splint; in resorting to it, however, there is no necessity to daub a large extent of surface with the ointment. To prevent more of the skin being irritated than is necessary, wrap a bandage around the limb, from below up to the Splint; then clip the hair away immediately over the enlargement, and apply the blister. In ten or twelve hours afterwards the bandage may be removed, and the blister washed with soap and water and a soft sponge.

Biniodide of Mercury.—This remedy is sometimes preferred to a blister; but as the action of the two are so closely similar when used to cases of this nature, it is unnecessary to describe the action of the Biniodide more fully. For every particular relating to the strength of the ointment, see page 390.

Sometimes it is necessary both to fire and Blister a Splint, ere the lameness is dispersed.

RING BONE AND SIDE BONE.

Ring Bone and Side Bone are diseases of a very similar character.

The seat of Ring Bone is within and upon the pastern bones (see *h*, *Fig.* 31.) The pastern joints of both the fore and hind limbs are alike predisposed to become affected. The disease, as its name implies, extends *round* the pastern.

The seat of Side Bone is upon and within the alæ of the coffin bone, or at the sides of the foot. Both diseases, unless arrested during their incipient stages, will ultimately give rise to incurable lameness.

The use of a high-heeled shoe, together with firing and blistering, and allowing the patient long rest in a loose box, are perhaps the most likely modes of effecting a cure.

WIND GALLS, BOG SPAVIN, AND THOROUGH PIN.

Wind Galls, Bog Spavin, and Thorough Pins, are all affections of a closely similar nature. They essentially consist of an abnormal amount of synovia, which collects within the bursæ of the tendons of both the fore and hind limbs; and also enlargement of the bursal and synovial membranes of the hock.

The bursal enlargement, when situate in the synovial tissues contiguous to the fetlock joints, is called a Wind Gall; a Bog Spavin, when present at the inferior and anterior part of the hock (see *g*, *e*, *c*, *Fig.* 30, page 502); and a Thorough Pin, when the synovial sac is distended, which is situate at the superior and posterior region of the hock, or between the os calcis and the tibia (see *Fig.* 30, *i*, *h*, page 502).

Wind Galls, Bog Spavin, and Thorough Pins, are considered (but erroneously so), to be frequent causes of lameness. The real cause of lameness, in these cases, is dependant upon that condition of the tissues which is the cause of the bursal distention. Bursal distention is merely an effect of morbid excitement existing within the synovial tissues of the locality affected, the cause of which is injury from over-exertion.

Treatment.—The removal of a Wind Gall, a Bog Spavin, or a Thorough Pin, is a very simple affair. Open them with a lancet and they are gone in a moment. Not so, however, with the morbid condition existing within the synovial membranes; to subdue this is altogether a different affair.

The old writers on farriery recommend Firing and Blistering as remedies for these maladies. So far, however, as my experience goes, I never saw the least benefit, in cases of this kind, from either the one or the other; but I have, on numerous occasions, known very aggravated cases of bursal distention

to thoroughly disappear during the time of the patient being allowed a long run at grass.

In all cases, then, of chronic enlargement of the bursæ, associated with lameness or stiffness, I strongly recommend, when practicable, to allow every animal so affected a winter's run at grass. The cold air, and the freedom from all exertion beyond what is voluntary, on the part of the patient, will tend, perhaps more than any other measure, to cure Bog Spavins, Wind Galls, and Thorough Pins.

The best palliatives, in general, are—cold water bandages; pressure to the distended bursæ, by means of rolls made of linen or wash-leather; and Arnica Lotion. For directions as to the preparation and mode of applying these rolls, see page 473; and with regard to the Arnica Lotion, see page 468.

CURB.

What is a Curb? and how can it be cured? are questions frequently asked by gentlemen owning horses.

The seat of Curb, and its appearance when in existence, are matters well known to most individuals familiar with horses.

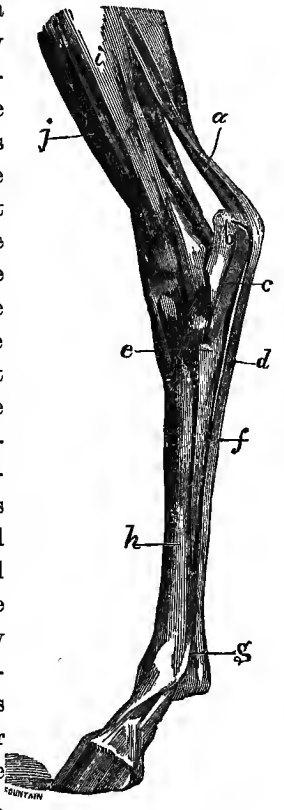
Spavin is a disease which occasionally affects the bones of the hock; Curb is a disease which occasionally affects certain of its ligaments, or of those structures which hold the bones of the joints firmly in their natural position.

A Curb is a well-known protuberance which occasionally exists upon the posterior ridge of the hock, a few inches below its point, or what is commonly called the heel of the joint. This protuberance will be seen the best, if the observer first places the hind limbs of the animal parallel to each other; he should then stand close to the hind quarter of the limb affected, so as to look down upon the point of the hock. In this position

the least deviation from the straight line proper to the limb will be at once detected.

The seat and true character of Curb will perhaps be more satisfactorily explained and understood by reference to the annexed engraving.

Fig. 32.



The engraving represents the outer side of the left hind limb of a horse, dissected. The figure is partly diagramatic. In describing the engraving I shall merely refer to those letters which relate to the structures more or less involved in Curb; *a* the tendo achilles, two tendons of great strength which are situated above the point of the hock and behind the limb; *b* the os calcis, or the bone which forms the prominence of the hock; *e* the head of the outer splint bone; *d f* the flexor tendons—these tendons are a continuation of the tendo achilles; *c* the calcaneo cuboid ligament. This ligament arises towards the top of the os calcis bone *b*, and is inserted into the back of the small bones of the hock, and also to the head of the outer splint bone. Now Curb is simply a sprain of this ligament; sometimes, however, it is associated with sprain of the flexor tendons at the point *d*, in which case the swelling will be more prominent, and the lameness will also be more apparent.

SYMPTOMS.—Curb, during the acute stage of the disease, is always productive of lameness. The following symptoms were present in a case of Curb which I treated a short time ago, the like of which may be expected to be present to a greater or less degree in every case of the kind.

I.—There was a slight swelling at the back of the hock, near to the head of the outer splint bone. (See letter *e*, *Fig.* 32.

II.—The swelling was warmer than the skin contiguous to the swelling.

III.—When the animal was at rest, he stood almost constantly with his weight upon the sound limb.

IV.—In walking the animal, the lameness was slight; but when the horse was made to trot, the lameness became more evident. The animal avoided flexing the hock; the heel of the foot was not brought to the ground, and the fetlock joint occasionally shot forwards: and the patient suddenly relieved the limb by partially halting.

TREATMENT.—The best remedies and modes of treatment in general, are—a high-heeled shoe, cold lotions, and Firing and Blistering.

High-Heeled Shoe.—For the proper form of shoe, and how it should be made, see *Fig.* 26, and pages 470 to 471.

Cold Lotions.—Arnica lotion and cold water bandages should be freely applied to the hock, for at least a period of six or eight days; when, if the temperature of the swelling is reduced and the lameness removed, the necessity of resorting

to the cautery may be considered. For general particulars relating to Firing and Blistering, see pages 470 to 471.

When a patient affected with Curb is again put to work, the hind feet ought to be shod with longer calkins or deeper heels than ordinary, and the shoe maintained so for a considerable time afterwards.

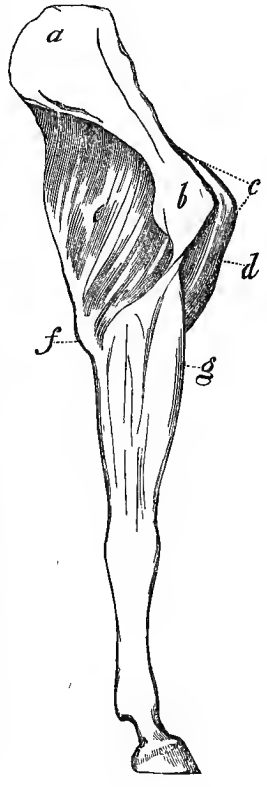
SHOULDER SPRAIN.

Horses are sometimes lame in consequence of disease in the shoulder. The principal forms of shoulder lameness are three, viz.—lameness from Rheumatism; sprain of the tendon of the flexor brachii; and disease of the articulatory surfaces of the bones which constitute the joint of the shoulder. The most common of the two latter, is sprain of the tendon of the flexor brachii.

Shoulder lameness, comparatively speaking, is not common; but when it does occur, the symptoms are generally so well marked, that little difficulty need be experienced in determining the nature and seat of the disease. The engraving in the next page will aid the reader to a more complete understanding of this matter: *a* the scapula, or the blade bone of the shoulder: *b* the lower end of the scapula, or the situation of the shoulder joint: *e* the triceps extensor brachii muscle—extensor of the arm and elbow joint of the fore limb: *c* the tendon of the flexor brachii muscle: *b* the body of the muscle: *f* the elbow joint: *g* the extensor metacarpi magnus muscle (this muscle is merely shown in outline). The principal structure, however, to which the attention of the reader is directed, is the flexor brachii *c d*. The tendon *c* is of considerable length; and where it passes over the front part of the shoulder joint *b*, it is provided with a large bursæ, or synovial bag. The space enclosed between the lines *c* is where the tendon is generally

sprained. It is more liable to be affected at the particular locality pointed out, in consequence of the following simple reasons—first, because of the acute angle at which the tendon is placed, in having to pass over the front part of the joint; and secondly, from the great vascularity of the bursæ of the tendon.

Fig. 33.



Symptoms.—The symptoms manifested by the patient are peculiar. The animal trails the toe;—and instead of the limb being freely advanced, its flexion and direct advancement will be avoided as much as possible. It will be carried in a circumflex manner, and the animal will advance sideways. The sidelong movement, however, will not be so very palpable, unless the disease be severe, or of considerable duration, when this movement becomes well marked. The toe will likewise be turned outwards; the heel will not be brought to the ground; the point of the shoulder will be warmer than ordinary, and it will also be tender upon pressure.

Causes.—The causes of shoulder lameness are numerous. Rheumatism is a cause. The remaining causes are principally of a mechanical kind—such as pushes against the point of the shoulder; injuries from blows and kicks; sprains from galloping

and leaping. Sprain of the flexor brachii will sometimes occur to a horse while drawing the plough. If the animal, while so engaged, is compelled to travel with one fore foot in the furrow and the other out, an unequal stress is necessarily forced upon one shoulder, and sprain of the tendon is very liable to take place in consequence.

TREATMENT.—The best remedies and modes of treatment, in general, are—a high-heeled shoe, Arnica lotion, cold water cloths (secured to the part injured), Blisters, Setons, and long rest to the patient in a loose box.

Sometimes it is necessary to tie a horse up to the rack, and their force him to continue, for two or three weeks, without allowing him to lie down. The act of rising from the ground is very likely to inflict fresh injury to the tendon of the flexor brachii, when sprained.

THRUSH—CANKER.

Thrush, or as it is frequently denominated, Running Thrush, is a well known affection. Its essential outward characteristic consists of a discharge of fetid matter from the middle and sides of the frog.

The hind feet are more subject to the disease than the fore feet, a fact which perhaps may be explained as follows:—Most horses, when in the stable, have a pernicious habit of standing with the hind feet in their own dung: the dung, in time, becomes an irritant to the foot; an inflammatory condition of the sensitive tissues of the frog is established, and fetid matter is discharged in consequence.*

Thrush, Canker, and Grease are diseases of a closely similar character. Grease, if allowed to continue, will spread to the frog, and Thrush will be established; while Canker invariably

* To prevent bad effects to the feet in consequence of this habit, I recommend the hind feet to be always shod with leather. See Section V., page 105.

arises from Thrush. The disease, Thrush, is inflammation of the sub-tissues of the frog; Canker is the same condition of disease, extended to the sub-tissues of the sole of the foot.

Thrush is a disease which many affect to consider an insignificant malady. I do not, however, so regard it. It is, to all intents and purposes, unsoundness; it is difficult to cure, and, if neglected, it is certain to terminate in Canker—one of the most virulent and difficult diseases to eradicate which can affect the horse. Old horses are far more subject to both Thrush and Canker than young horses. It is very rare to find a young horse affected with the latter disease.

TREATMENT OF THRUSH.—The best remedies and modes of treatment, in general, are—Poultices, Nitric Acid, Sulphate of Copper, Balsam of Sulphur, cleanliness, and shoeing with leathers.

Poultices.—Prior to commencing a course of treatment to arrest the fetid discharge, remove the shoes, and poultice the feet for two or three days in succession. Poultice them with bran, coarse flour, water, and yeast. If the water is added hot, let the poultice cool before adding the yeast, otherwise the latter will be destroyed, and also what benefit might result from its application to the feet. The benefits sought to be obtained by poulticing the feet are—first, to cleanse them thoroughly; and secondly, to modify the peculiar character of the inflammation which exists in the secreting tissues of the frog.

Balsam of Sulphur.—Having poulticed the foot as directed, and thoroughly cleansed the frog, the next step is to pare the frog in every part, particularly along its sides. Pare deep down between it and the sole of the foot, so as to thoroughly expose the bottom, and bring into view the tissues which secrete the fetid discharge. Having done this, and

removed every portion of ragged, horny matter, touch the parts exposed with a feather, previously dipped in Nitric Acid. Dress freely with Balsam of Sulphur, made close to the foot by a packing of soft tow, the whole should then be firmly secured to the sole by means of the shoe and a leather covering.

Sulphate of Copper.—Sometimes Balsam of Sulphur fails to cure the disease. When such is the case, resort to the Sulphate of Copper, which may be applied mixed with treacle; use it in the manner as directed to use the Balsam of Sulphur. When the malady is obliterated, continue, for some time afterwards, the use of leather soles to the feet.

Treatment of Canker.—In commencing the treatment of Canker, the first essential is to freely expose every part of the sole which may be diseased. So long as any portion of diseased tissue remains unexposed, every effort to cure Canker will prove abortive. The most difficult parts to explore, when affected, are the corners of the heels, and between the laminæ and the crust; in fact, when the disease spreads to the laminæ in front of the foot, the case may be considered as all but incurable. The best remedies and modes of treatment, in general, are—Poultices, Chlorate of Potass, Balsam of Sulphur, Nitric Acid, Sulphur, Liniment Eruginis, and pressure to the sole.

Poultices.—Chlorate of Potass.—Poultice the feet as directed for Thrush; and, as the horn becomes softened, remove it with the drawing-knife, until every portion of diseased structure is fully exposed; after which, discard the yeast, and mix the bran and coarse flour with hot water, in which has been previously dissolved about 2 or 3 drachms of Chlorate of Potass. Poultices of this kind may be occasionally applied to the feet for several days in succession: continue them, in fact,

until all the fetor is entirely removed from the discharge. Having removed the fetor, dress the sole with Balsam of Sulphur and small twisted pads of tow, closely packed and firmly pressed to every part; then apply the leather sole as directed above. In this manner the dressings may be repeated every five or six days.

Sulphur.—Sometimes dry Sulphur applied to the foot, and secured there by pads of tow and a leather sole, has a capital effect. Sulphur should also be given to the patient, in doses of 2 drachms, three or four times a week.

Nitric Acid.—Liniment Eruginis—Sometimes it is necessary to dress the foot with Nitric Acid; the process is a severe one, but frequently beneficial. After the Acid, apply the Liniment Eruginis; apply it as the Balsam of Sulphur is directed to be used.

In conclusion, I may observe that the feet, after being dressed as directed, should be kept perfectly dry. Secondly—great patience and perseverance should be exercised in treating a case of Canker; it is difficult to cure, and the curative process is slow. Thirdly—powerful escharotics, such as Nitric Acid, if applied too frequently, create a new disease which is as obstinate to cure as Canker; caution should, therefore, be exercised in using these remedies.

SANDCRACK.

Sandcrack is so well known as to render any elaborate description of the malady unnecessary. It consists of a fissure or division of the hoof, and it is alike common to both the fore and the hind feet. It generally exists either on the inner or the outer sides of the foot; sometimes, however, it is found upon the front of the foot extending from the coronet to the point of the toe. When present at the side

of the foot, it is called *Quarter* Sandcrack; if present in front of the organ, it receives the name of *Toe* Sandcrack.

Sandcrack is a frequent cause of acute lameness, because of the sensitive tissues of the foot being exposed thereby, and becoming inflamed in consequence.

TREATMENT.—Several modes of treatment have been proposed for its cure; the most certain and effectual, however, that I know of, is the one here recommended.

Poultice the affected foot for three, four, or five days in succession as necessity may require, with poultices of bran containing hog's lard; then with a sharp drawing knife cut away the horn at the top of the Sandcrack, so as to allow the coronary frog band, or the secreting villi of the hoof at this part, perfect liberty to secrete new horn. When the necessary amount of horn is removed, should the wounded tissues bleed, the operator will require to wait until the bleeding ceases; after which he should cover the exposed villi, together with the remaining portion of the fissure, with a coating of warm cement, made of three-fourths pitch and one-fourth gutta percha; immediately after which the foot should be firmly bound up by passing a quantity of copper wire around it; the patient is then to be turned into a loose box, and there allowed to remain at least for ten or twelve weeks.

In removing the horn, and otherwise operating as directed, observe the following essentials:—

I.—Before the operator attempts to cut away the top part of the crack, the hoof should be made soft and pliable as possible with poultices. Poultices will not only soften the horn, but they will remove incipient inflammation, and cleanse away all the dirt which may have collected within the crack.

II.—After cutting away as much horn as may be deemed necessary (the more the better), and before the warm cement is applied, the animal should have a bar-shoe secured to the foot.

III.—In binding the foot, avoid passing the wire immediately over the exposed villi, unless these structures are well covered with a small pad of fine tow or cotton wool, previously dipped into the warm cement.

The advantages derived from treating Sandcrack as directed above are these:—it cures the malady thoroughly; while the new horn, if the animal be allowed to rest, will be so thick and abundant that it will never again crack in the same locality—an advantage which is not obtained by any other known mode.

The crust of the foot is secreted at the rate of one inch in three months; and one inch of new horn should be in existence before the animal is again put to work, otherwise there is considerable risk of the new horn being split, and the animal again becoming lame.

CORNS.

"This is a very common and a very troublesome disorder; it is frequently occasioned by the smith, or in consequence of bad shoeing. Corns are the most common to flat feet, and feet with weak, low heels. They are occasioned by the pressure of the heel of the shoe, either by its bearing immediately on the sole where it is too thin to bear the pressure, or by the shoe forcing the heel of the crust inwards. In this way the sensible sole is frequently bruised, the small blood-vessels ruptured, and the effused blood penetrates the pores of the horny sole, thereby causing the dark red appearance observable on paring out the heels.* (See *f f*, *Fig.* 11, page 85).

* White's Farriery, edited by Spooner.

TREATMENT.—The best remedies and modes of treatment, in general, are—paring out the Corns, and afterwards applying a leather sole and a bar-shoe to the foot. The foot should also be dressed with Tar, or Balsam of Sulphur and tow. In those cases where the lameness is acute, and the Corn is of very recent origin, the foot should be well poulticed, with a compound of bran, linseed meal, and hot water. Sometimes a Corn will inflame and suppurate. Poultices, in cases of this kind, are indispensable.

PRICKS FROM SHOEING.—PUNCTURED FOOT.

Injury to the foot from pricking the sensitive structures when nailing the shoe upon the foot, and puncture of the organ from gathering a nail, are matters of daily occurrence; and as the two are of a very similar character, the few remarks I have to make will apply equally to both.

TREATMENT.—When the foot is pricked or punctured, the shoe ought to be removed, and the sole of the foot should be pared until it readily springs from pressure; the organ should then be immersed in a large poultice—composed of bran, linseed meal, and hot water, and the poultice should be changed every six or eight hours, and its use persevered in until the inflammatory action arising from the injury subsides. The wound should also be occasionally examined, to see if matter be secreted within—and if secreted, it should be freely evacuated; after which, if judiciously treated, the effects of the injury will be speedily removed.

Sometimes a nail will puncture the foot at the side of the frog, and forced so far into the soft tissues as to penetrate the flexor tendon, or the coffin joint, and perhaps liberate the synovia of the joint, in which case, unless prevented by proper treatment, all the evil effects of Open Joint will supervene. The proper

treatment to pursue, however, will be to subdue the inflammation by cold applications repeatedly applied to the heel of the foot, and every attention should be given to arrest the flow of synovia.

In every case of prick or puncture of the foot, the object is to prevent the escape of matter at the coronet, and this is best effected by paring and poulticing the foot, and by allowing the patient to rest; after which the sole should be protected for some time by a leather sole and a bar-shoe.

QUITTOR.

"A Quittor," says Mr. Percival, "is a sore on the coronet, connected with a sinus in the foot. The usual seat of the disease is the inner side of the coronet. It appears as a conical tumour, sometimes so painful as to occasion considerable lameness. Its formation is commonly slow, and not unfrequently imperfect." The disease is alike common to both the fore and hind feet. It is a very painful malady; and it may be stated that draught horses are more liable to the disease than saddle or harness horses.

Causes.—Quittor may arise from punctures of the foot; also from an inflamed and suppurating Corn; and from any wound inflicted upon the sole of the organ, or upon its coronary substance.

Treatment.—Poultices to the foot; opening out all sinuses; freely evacuating pent-up matter; caustic dressings; the use of a high-heeled shoe; and long rest to the patient—are the proper means of cure.

THE END.

GLOSSARY OF SCIENTIFIC TERMS

USED IN THE PRESENT TREATISE.

A.

Abdomen. The belly.

Abnormal. Out of rule. Irregular.

Abscess. A collection of purulent matter

Absorption. A taking into the system of fluids by porous tissues.

Actual Cautery. See cautery.

Acute. Sharp, painful, severe.

Ankylosis. A stiffening of a joint from a deposit of hone thereon.

Asphyxia, Interrupted breathing attended with danger to life.

Asphyxiated. In a state of asphyxia.

Asthenic. A term applied to diseases which are attended with a low feeble condition of the vital powers.

Atrophy. A wasting of the whole body, or any part of it.

B

Bronchial. Belonging to the wind pipe.

Bronchitis. Inflammation of the bronchial tubes.

Bronchus. The windpipe.

Bulbous. Lumpy, full of globular lumps.

Bursæ. Little bags containing synovial fluid. See synovia.

C

Calculi. Stony substances occasionally formed in the kidneys and intestines.

Caries. A term applied to dead bone caused by disease thereof.

Cartilage. Gristle.

Catarrh. The medical term for a cold.

Chronic. A term applied to disease which has existed for a long time.

Cranium. The skull.

Cyst. A small bladder containing hair.

D

Deglutition. The act of swallowing.

Delirium. Disease of the brain producing extensive violence or madness.

Depurating. A term applied to those organs which purify the fluids of the body, such as the kidneys, lungs, and skin.

Diagnosis. The recognising a disease by its symptoms.

Diaphragm. A muscle which divides the chest from the abdomen. A large flat muscle, one of the principal agents in breathing.

Diuresis. An excessive discharge of urine.

Dysentery. Inflammation of the mucous tissues of the large intestines.

E.

Emphysema. An escape of air between the lungs and the membrane which covers them; Broken wind.

Endemic. A term applied to a disease prevalent in, or peculiar to, a particular district.

Enteritis. Inflammation of the bowels.

Epidemic. A term applied to any generally prevalent disease.

Epiglottis. A cartilage situate at the upper opening of the larynx.

Epistaxis. Bleeding from the nose.

Epizootic. The same as Epidemic, which see.

Equine. Of or belonging to a horse.

F.

Fetid. Stinking.

Fetor. A stench.

Fistula. A sore of a tubular form, having an opening at its lower end.

Fistulous. Having the character of a Fistula.

G.

Gangrene. Incipient mortification.

Gastric. Belonging to the stomach.

Gastritis. Inflammation of the stomach.

Gleet. A discharge of mucus.

Glottis. The upper opening of the larynx.

Glands. Organs which secrete mucus, saliva, urine, &c.

H.

Hæmaturia. The voiding of blood mixed with urine.

Hygiene. The theory and practice of diet to regain health.

Hypertrophy. Undue enlargement of structure or of any organ of the body.

I.

Idiopathic. A term applied to disease arising without any apparent cause—opposed to *traumatic*, which see.

Incisors. The front teeth.

Inflammation. An unnatural action of the small blood vessels of any part, attended with redness, swelling, heat, &c.

Intermittent. A term applied to a disease ceasing and returning at regular or irregular periods.

L.

Laminæ. The plates (both vascular and horny) of the foot of the horse.

Laminitis. Inflammation of the vascular laminæ.

Lampas. An enlargement of the roof of the mouth, immediately behind the incisor teeth.

Larynx. The top of the windpipe, the organ of the voice.

Laryngitis. Inflammation of the larynx.

Ligament. A gristly substance which unites the bones at their extremities.

Ligamentous. Of or belonging to a ligament.

Lymph. A fluid which circulates in the lymphatic vessels. A semi-fluid exuded by the serous membranes when inflamed.

Lymphatics. Vessels containing lymph.

Lymphitis. Inflammation of the lymphatics.

M.

Malor Cavities. Hollows situate within the cheek bones.

Malformation. A deviation from the natural form of an organ.

Membrana-Nictitans. A cartilaginous structure situate at the inner corner of the eye of most quadrupeds.

Metastasis. A change of disease from one part of the body to another.

Molars. The grinding teeth.

Morbid. Diseased.

Muco-Purulent. Discharging mucus and pus.

Mucous Membrane. The membrane which constitutes the surface of the nostrils, mouth, windpipe, stomach, and bowels.

Mucus. The fluid secreted by the mucous membranes.

Myositis. Inflammation of a muscle.

N.

Nasal Gleet. A discharge of mucus from the nose.

Nephritis. Inflammation of the kidneys.

Nosology. An arrangement, or classification of diseases.

O.

Oesophagus. The muscular tube which conveys the food from the mouth to the stomach.

Ophthalmia. Inflammation of the eye.

Os. A bone.

Ossification. The formation of bone.

Ozena. A disease very simllar to glanders.

P.

Papula. A pimple.

Pathognomonic. A term given to those symptoms which are peculiar to a disease.

Peritonitis. Inflammation of the peritoneum, or the lining membrane of the bowels.

Pharynx. The entrance to the oesophagus. It is situate at the back of the mouth.

Pharyngitis. Inflammation of the pharynx.

Pleura. The fine membrane which lines the chest and covers the lungs.

Pleuritis. Inflammation of the pleura.

Pleurodynia. A rheumatic disease of the muscles of the chest.

Pneumonia. Inflammation of the lungs.

Pneumonitis. See Pneumonia.

Polypus. A tumour growing within the nose.

Prognosis. Foretelling the result of disease.

Prurigo. An itching disease peculiar to the skin.

Purpura. A systemic disease, the peculiarity of which is effusion of blood beneath the skin.

R.

Râle. A rattling arising from a diseased state of the bronchial tubes.

Remittent. A term applied to disease which increases and decreases at intervals.

Ronchus. See Râle.

S.

Scarlatina. Scarlet Fever, inflammation of the skin generally.

Schirrhosity. A morbid hardness of structure, arising from long continued disease.

Sedatives. Medicines which assuage pain.

Serum. The watery portion of the blood.

Sinus. See Fistula.

Sporadic. A term applied to diseases occurring here and there.

Sthenic. A term applied to diseases which are produced by accumulated excitability. (See Asthenic.)

Sub-maxillary. Of or belonging to the lower jaw.

Superpurgation. Excessive purging.

Suppurative. Forming purulent matter, or pus.

Suture. The uniting the lips of a wound by sewing.

Synovia. The fluid sereted within a joint for the purpose of lubrication.

T.

Tendon. The gristly termination of a muscle.

Tendinous. Relating to a tendon.

Tetanus. The disease commonly called lock-jaw.

Tissue. The textures which constitute the different organs of animals.

Trachea. The windpipe.

Tracheitis. Inflammation of the trachea.

Tracheotomy. Cutting open the trachea.

Traumatic. Belonging to wounds; caused by wounds.

Trephine. An instrument used for sawing a circular portion of bone out of the skull.

Tubercle. A collection of scrofulous matter, which generally forms within the lungs.

Turbinated Bones. Bones within the nostrils which are of a curved form.

Tympany. Distention of the abdomen by gas.

Typhus. A fever attended with great debility of the system.

Typhoid. Having the character of typhus.

U, V.

Ulcer. A spreading sore attended with loss of substance, caused by inflammation.

Ureters. The channels or tubes which convey the urine from the kidneys to the bladder.

Vascular. Of or belonging to blood-vessels.

Vermifuge. A medicine to expel worms.

Vertigo. Giddiness of the head.

J. Brook, Printer, Market-Place, Huddersfield.